Federal Register

Wednesday,
February 23, 2005

Part II

Environmental Protection Agency

40 CFR Parts 51 and 52

Prevention of Significant Deterioration for Nitrogen Oxides; Proposed Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 51 and 52

[AD–FRL–7875–1; E–Docket ID No. OAR–2004–0013 (Legacy Docket No. A–87–16)]

RIN–2060–AM33

Prevention of Significant Deterioration for Nitrogen Oxides

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: To preserve the air quality in national parks and other areas that are meeting the national ambient air quality standards (NAAQS) for nitrogen dioxide (NO_2), EPA is reevaluating the increments for NO_2 that were first established in 1988 under its program to prevent significant deterioration of air quality (PSD program). The EPA is initiating this rulemaking action to comply with a 1990 court ruling that directed the Agency to consider and harmonize the statutory criteria for establishing PSD regulations for nitrogen oxides (NO_X) contained in sections 166(c) and 166(d) of the Clean Air Act (CAA or Act).

After an initial reevaluation of the existing NO_2 increments under these statutory criteria, EPA is proposing three options. One proposed option is not to change the existing increments. We are also proposing two other options that would allow States to use alternative approaches in lieu of the existing increments for NO_2 to satisfy the statutory criteria for preventing significant deterioration of air quality due to emissions of NO_X. These proposed options include implementation of either an EPA-administered cap and trade program or a State planning approach.

DATES: *Comments.* Comments must be received on or before April 25, 2005.

Public Hearing. If anyone contacts EPA requesting a public hearing by March 15, 2005, we will hold a public hearing on or about March 25, 2005.

ADDRESSES: Submit your comments, identified by Docket ID No. OAR–2004–0013, by one of the following methods:

- Federal eRulemaking Portal: *http://www.regulations.gov*. Follow the on-line instructions for submitting comments.
- Agency Web site: *http://www.epa.gov/edocket*. EDOCKET, EPA's electronic public docket and comment system, is EPA's preferred method for receiving comments. Follow the on-line instructions for submitting comments.
- E-mail: *a-and-r-docket@email.epa.gov*.
- Fax: (202) 566–1741.
- Mail: Attention Docket ID No. OAR–2004–0013, U.S. Environmental Protection Agency, Mailcode 6102T, 1200 Pennsylvania Ave., NW., Washington, DC 20460. The EPA requests that a separate copy also be sent to the contact person listed below (*see* **FOR FURTHER INFORMATION CONTACT**).
- Hand Delivery: Attention Docket Number OAR–2004–0013, U.S. Environmental Protection Agency, EPA West (Air Docket), 1301 Constitution Ave., NW., Washington, DC 20004. Such deliveries are only accepted during the Docket's normal hours of operation, and special arrangements should be made for deliveries of boxed information. The EPA requests a separate copy also be sent to the contact person listed below (*see* **FOR FURTHER INFORMATION CONTACT**).

Instructions: Direct your comments to Docket ID No. OAR–2004–0013 (Legacy Docket No. A–87–16). The EPA's policy is that all comments received will be included in the public docket without change and may be made available online at *http://www.epa.gov/edocket*, including any personal information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Do not submit information that you consider to be CBI or otherwise protected through EDOCKET, regulations.gov, or e-mail. The EPA EDOCKET and the Federal regulations.gov Web sites are ''anonymous access'' systems, which means EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an e-mail comment directly to EPA without going through EDOCKET or regulations.gov, your e-mail address will be automatically captured and included as part of the comment that is placed in the public docket and made available on the Internet. If you submit an electronic comment, EPA recommends that you include your name and other contact information in the body of your comment and with any disk or CD ROM you submit. If EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, avoid any form of encryption, and be free of any defects or viruses. For additional information about EPA's public docket, visit EDOCKET on-line or see the **Federal Register** of May 31, 2002 (67 FR 38102). For additional instructions on submitting comments, go to section I.B of the **SUPPLEMENTARY INFORMATION** section of this document.

Docket: All documents in the docket are listed in the EDOCKET index at *http://www.epa.gov/edocket*. Although listed in the index, some information is not publicly available, *i.e.*, CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy form. Publicly available docket materials are available either electronically in EDOCKET or in hard copy at the U.S. Environmental Protection Agency, EPA West (Air Docket), Room B102, 1301 Constitution Ave., NW., Washington, DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566–1744, and the telephone for the Air Docket is (202) 566–1742.

Public Hearing. People interested in presenting oral testimony or inquiring as to whether a hearing is to be held should contact Ms. Chandra Kennedy, OAQPS, Integrated Implementation Group, Information Transfer and Program Integration Division (C339–03), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711, telephone number (919) 541–5319 or e-mail *kennedy.chandra@epa.gov*, at least 2 days in advance of the public hearing. People interested in attending the public hearing must also call Ms. Kennedy to verify the time, date, and location of the hearing. The public hearing will provide interested parties the opportunity to present data, views, or arguments concerning the proposed action. If a public hearing is held, it will be held at 10 a.m. in EPA's Auditorium in Research Triangle Park, North Carolina, or at an alternate site nearby.

FOR FURTHER INFORMATION CONTACT: Mr. Dan deRoeck, Information Transfer and Program Integration Division (C339–03), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711, telephone (919) 541–5593, fax (919) 541–5509, or e-mail at *deroeck.dan@epa.gov*.

SUPPLEMENTARY INFORMATION:

I. General Information

A. Does This Action Apply to Me?

Entities potentially affected by this proposed rule include sources in all industry groups. The majority of sources potentially affected are expected to be in the following groups:

Industry group	SIC [a]	NAICS [b]
Electric Services	491	221111, 221112, 221113, 221119, 221121, 221122
Petroleum Refining	291	324110
Industrial Inorganic Chemicals	281	325181, 325120, 325131, 325182, 211112, 325998, 331311, 325188
Industrial Organic Chemicals	286	325110, 325132, 325192, 325188, 325193, 325120, 325199
Miscellaneous Chemical Products	289	325520, 325920, 325910, 325182, 325510
Natural Gas Liquids	132	211112
Natural Gas Transport	492	486210, 221210
Pulp and Paper Mills	261	322110, 322121, 322122, 322130
Paper Mills	262	322121, 322122
Automobile Manufacturing	371	336111, 336112, 336211, 336992, 336322, 336312, 336330, 336340, 336350, 336399, 336212, 336213
Pharmaceuticals	283	325411, 325412, 325413, 325414

[a] Standard Industrial Classification
[b] North American Industry Classification System.

Entities potentially affected by the proposal also include States, local permitting authorities, and Indian Tribes whose lands contain new and modified major stationary sources.

B. What Should I Consider as I Prepare My Comments for EPA?

1. Submitting CBI

Do not submit proprietary or confidential business information (CBI) to EPA through EDOCKET, regulations.gov, or e-mail. Clearly mark the part or all of the information that you claim to be CBI. For CBI information in a disk or CD ROM that you mail to EPA, mark the outside of the disk or CD ROM as CBI and then identify electronically within the disk or CD ROM the specific information that is claimed as CBI. In addition to one complete version of the comment that includes information claimed as CBI, a copy of the comment that does not contain the information claimed as CBI must be submitted for inclusion in the public docket. Information so marked will not be disclosed except in accordance with procedures set forth in 40 CFR part 2. Send an additional copy, clearly marked as CBI, as above, to: Mr. Roberto Morales, OAQPS Document Control Officer (C339–03), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711.

2. Tips for Preparing Your Comments

When submitting comments, remember to:

i. Identify the rulemaking by docket number and other identifying information (*e.g.*, subject heading, **Federal Register** proposal publication date and reference page number(s)).

ii. Follow directions—The agency may ask you to respond to specific questions or organize comments by referencing a Code of Federal Regulations (CFR) part or section number.

iii. Explain why you agree or disagree; suggest alternatives and provide substitute language for your requested changes.

iv. Describe any assumptions and provide any technical information and/or data that you used.

v. If you estimate potential costs or burdens, explain how you arrived at your estimate in sufficient detail to allow for it to be reproduced.

vi. Provide specific examples to illustrate your concerns, and suggest alternatives.

vii. Explain your views as clearly as possible, avoiding the use of profanity or personal threats.

viii. Make sure to submit your comments by the comment period deadline identified.

C. Where Can I Obtain Additional Information?

In addition to being available in the docket, an electronic copy of today's proposed rule is also available on the World Wide Web through the Technology Transfer Network (TTN). Following signature by the EPA Administrator, a copy of today's proposed rule will be posted on the TTN's policy and guidance page for newly proposed or promulgated rules at *http://www.epa.gov/ttn/oarpg.* The TTN provides information and technology exchange in various areas of air pollution control. If more information regarding the TTN is needed, call the TTN HELP line at (919) 541–5384.

D. How Is this Preamble Organized?

The information presented in this preamble is organized as follows:

II. Overview of Today's Proposed Action

To ensure protection of the air quality in national parks and other areas that meet the NAAQS for NO_2, EPA is reevaluating the NO_2 increments that were first established in 1988 under the PSD program. In accordance with the directions of a 1990 court ruling, the Agency is conducting this review to consider and harmonize the statutory criteria, contained in subsections 166(c) and 166(d) of the Act, that govern the content of EPA's pollutant-specific PSD regulations for NO_X. The EPA is proposing to apply these criteria using the ''contingent safe harbor'' approach that was suggested by the court as an appropriate way to ensure that EPA's PSD regulations for nitrogen oxides will prevent significant deterioration of air quality due to emissions of NO_X in parks and other areas that are either designated to be in attainment with the NAAQS or are unclassifiable.

Today's proposal includes three options to address our responsibility to promulgate pollutant-specific regulations to prevent significant deterioration of air quality from emissions of NO_X and to preserve, protect and enhance the air quality in our national parks and other areas of special interest. The first option is to retain the existing regulatory format using the increments that we originally adopted in 1988. We also propose two alternative approaches that we believe would satisfy the goals and objectives of the statutory PSD program in lieu of the existing NO_2 increments. These two additional options, for which we are seeking public comment today, would permit States to adopt a specific market-based cap and trade approach or to demonstrate that strategies and measures in their State Implementation Plans (SIPs), in conjunction with other Federal requirements, will prevent significant deterioration of air quality due to emissions of NO_X. Each of these options is summarized immediately below and described in greater detail in section VI of this preamble.

A. Option 1: Retain Existing Increment System for NO_X

The EPA is reviewing whether, considering the criteria in section 166(c), EPA should establish different increments for NO_X than the ones that were adopted in 1988. The existing increments were established as a percentage of the NAAQS, and were based on the ambient measure (NO_2) and the same time period (annual) as the NAAQS. An increment with these characteristics satisfies the minimum requirements of section 166(d) of the Act for preserving the air quality in parks and other attainment and unclassifiable areas. In accordance with the ''contingent safe harbor'' approach, EPA is undertaking this additional review to determine whether the criteria in section 166(c) indicate that it is necessary for EPA to deviate from this ''safe harbor'' in order to satisfy the criteria in section 166(c).

Based on our initial review of the existing NO_2 increments under these statutory criteria, one option is to retain the existing PSD regulations for NO_X, which includes the existing NO_2 increments, without modification because we believe the existing regulations protect the air quality in national parks and other attainment or unclassifiable areas, within the context of the criteria of section 166(c). Our review has considered and balanced the criteria in section 166(c) and the incorporated goals and purposes of the PSD program set forth in section 160 of the Act. We have also reviewed the existing regulatory framework of the Agency's PSD regulations for NO_X and the scientific and technical information pertaining to the health, welfare, and ecological effects of NO_X. In light of this review, EPA believes that the statutory requirements are met by retaining annual NO_2 increments based on the percentages of the NAAQS employed to set the increments for sulfur dioxide (SO_2). The available research on health and welfare effects indicates that the existing increments, in conjunction with the case-by-case permit review for additional impacts and impairment of air quality related values (AQRV), fulfills the criteria in section 166(c). The EPA requests comment on this option and its supporting review.

B. Option 2: Allow States To Use a Cap and Trade Program in Lieu of an Increment System for NO_X

As an alternative approach to retaining the existing increment system for NO_X, we are soliciting comments on a proposed option that would allow States to prevent significant deterioration of air quality due to emissions of NO_X by implementing the model cap and trade program for EGUs contained in our proposed Clean Air Interstate Rule (CAIR).[1] A State that implements this program to address NO_X emissions would no longer be required to conduct certain source-specific analyses, including the current NO_2 increment analysis.

This option would require States to revise their SIPs to include a cap and trade program to reduce NO_X emissions in accordance with statewide emissions budgets prescribed by EPA. Neither the statewide budget nor the regional cap would be a legally enforceable limit on total NO_X emissions but would be used as an accounting technique to determine the amount of emissions reductions that would be needed from specific source categories to satisfy the budget or cap. The requirements of the cap and trade program would be enforceable, and this would ensure that as long as emissions from sources outside of the cap did not grow more than projected, the overall regionwide budget would be met.

As described in greater detail in section VI.B of this preamble, we believe that such a cap and trade program, while designed to address other CAA program requirements, is also an effective alternative to

[1] EPA proposed the CAIR, originally called the Interstate Air Quality Rule (IAQR), on January 30, 2004 (69 FR 4566), followed by a supplemental notice of proposed rulemaking on June 10, 2004 (69 FR 32684), to reduce emissions of SO_2 and NO_X in 29 States and the District of Columbia to contribute to the attainment of the $PM_{2.5}$ and 8-hour ozone NAAQS in a number of eastern States.

increments for preventing significant deterioration from emissions of NO_X. The EPA has utilized this approach with considerable success in several instances. The EPA proposed a model multi-State cap and trade program in its June 10, 2004, supplemental notice for the CAIR proposal that States could choose to adopt to meet the proposed emissions reductions requirements in a flexible and cost-effective manner. The EPA believes that the implementation of this kind of cap and trade program could bring about significant improvements in air quality and would offer many advantages over traditional command-and-control and project-by-project emissions reduction credit trading programs.

C. Option 3: Allow States Flexibility To Use a State Planning Approach in Lieu of an Increment System for NO_X

As a third option, we propose to allow a State to forego implementation of the NO_2 increments and associated requirements if the State can demonstrate that measures in its SIP, in conjunction with Federal requirements, would prevent significant deterioration of air quality from emissions of NO_X. In lieu of implementing the increment system for NO_X, a State would have to demonstrate that the specific planning goals and requirements contained in its SIP would satisfy the requirements in section 166 of the Act and the goals and purposes of the PSD program set forth in section 160.

This option would provide States with the flexibility to design a program to prevent significant deterioration of air quality from emissions of NO_X that may be more effective than increments. States would have to establish a clear planning goal that satisfies the requirements of sections 166(c) and 166(d) of the Act. To achieve this goal, a State could impose NO_X emissions limitations on any type of emissions sources it chooses, including new or existing sources. Under this option, EPA does not propose to require a State to demonstrate that its SIP includes a specific type of program that we believe is sufficient to satisfy the requirements of section 166. However, we believe that a goal to keep statewide emissions of NO_X from all sources below 1990 levels would prevent significant deterioration of air quality and satisfy the requirements of section 166 of the Act. Adoption of this goal could streamline our review of the State's demonstration, but a State would not be precluded from using another approach to prevent significant deterioration of air quality due to emissions of NO_X.

III. Background

A. PSD Program

Part C of title I of the Act contains the requirements for a component of the major new source review (NSR) program known as the Prevention of Significant Deterioration (PSD) program. This program sets forth procedures for the preconstruction review and permitting of new and modified major stationary sources of air pollution locating in areas meeting the NAAQS (''attainment'' areas) or areas for which there is insufficient information to classify an area as either attainment or nonattainment (''unclassifiable'' areas).

The applicability of the PSD program to a particular source must be determined in advance of construction and is pollutant specific. For new sources locating in an attainment or unclassifiable area, PSD applies when the source qualifies as a major source because it has the potential to emit any regulated NSR pollutant equals or exceeds either 100 or 250 tons per year (tpy) depending on the source category. In addition to reviewing the pollutant emitted at or in excess of the ''major source'' levels, the PSD permit review also covers each regulated NSR pollutant for which the area is in attainment or unclassifiable that the source would have the potential to emit in significant amounts.

For modified sources, PSD applies when an existing major stationary source undergoes a nonexcluded physical change or change in the method of operation that results in a significant net emissions increase of any regulated NSR pollutant for which the area is in attainment or unclassifiable. The PSD regulations define ''significant'' as a specific emissions rate (tons per year) for each regulated pollutant. Each regulated NSR pollutant emitted by the source must be reviewed independently for applicability purposes. Moreover, to determine the emissions of a particular pollutant for applicability purposes, the source may take into account the use of emissions control technology and restrictions on the hours of operation or rates of production, where such controls and restrictions are enforceable.[2]

[2] On December 31, 2002, we revised the PSD regulations to, among other things, enable major sources undergoing modification of existing emissions units to project future emissions increases on the basis of projected utilization of the modified equipment. Most States have not yet adopted the new provisions but they are in effect in States where EPA is the permitting authority (*i.e.*, where no State PSD rule has been approved by EPA) or where the State PSD rule incorporates the Federal regulations by reference. 67 FR 80186; 68 FR 11316 (March 10, 2003).

Once a source is determined to be subject to PSD, it must undertake a series of analyses to demonstrate that it will use the best available control technology (BACT) and will not cause or contribute to a violation of any NAAQS or incremental ambient pollutant concentration increase. In cases where the source's emissions may adversely affect an area classified as a Class I area, additional review is conducted to protect the increments and special attributes of such an area defined as ''air quality related values.''

When the permitting authority reaches a preliminary decision to authorize construction of each proposed major new source or major modification, it must provide notice of the preliminary decision and an opportunity for comment by the general public, industry, and other persons that may be affected by the major source or major modification. After considering and responding to the comments, the permitting authority may issue a final determination on the construction permit in accordance with the PSD regulations.

B. Existing Section 166 Regulations for NO_X

1. Statutory Provisions

In section 166(a) of the Act, Congress directed EPA to conduct a study and promulgate regulations to prevent significant deterioration of air quality which would result from emission of hydrocarbons, carbon monoxide, photochemical oxidants, and NO_X. Congress further specified that such regulations meet the following requirements set forth in sections 166(c) and 166(d):

> (c) Such regulations shall provide specific numerical measures against which permit applications may be evaluated, a framework for stimulating improved control technology, protection of air quality values, and fulfill the goals and purposes set forth in section 101 and section 160.
>
> (d) The regulations * * * shall provide specific measures at least as effective as the increments established in section 163 [for SO_2 and PM] to fulfill such goals and purposes, and may contain air quality increments, emission density requirements, or other measures.

The goals and purposes of the PSD program set forth in section 160 are as follows:

> (1) to protect public health and welfare from any actual or potential adverse effect which in the Administrator's judgment may reasonably be anticipate[d] to occur from air pollution or from exposures to pollutants in other media, which pollutants originate as emissions to the ambient air, notwithstanding attainment and maintenance of all national ambient air quality standards;

(2) to preserve, protect, and enhance the air quality in national parks, national wilderness areas, national monuments, national seashores, and other areas of special national or regional natural, recreational, scenic, or historic value;

(3) to insure that economic growth will occur in a manner consistent with the preservation of existing clean air resources;

(4) to assure that emissions from any source in any State will not interfere with any portion of the applicable implementation plan to prevent significant deterioration of air quality for any other State; and

(5) to assure that any decision to permit increased air pollution in any area to which this section applies is made only after careful evaluation of all the consequences of such a decision and after adequate procedural opportunities for informed public participation in the decisionmaking process.

Furthermore, the goals and purposes of the CAA set forth in section 101 are as follows:

(b) * * * (1) to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population;

(2) to initiate and accelerate a national research and development program to achieve the prevention and control of air pollution;

(3) to provide technical and financial assistance to State and local governments in connection with the development and execution of their air pollution prevention and control programs; and

(4) to encourage and assist the development and operation of regional air pollution prevention and control programs [; and]

(c) * * * to encourage or otherwise promote reasonable Federal, State, and local governmental actions, consistent with the provisions of this Act, for pollution prevention.

2. The 1988 NO_2 Increments

On October 17, 1988, EPA promulgated pollutant-specific PSD regulations for NO_X under section 166 of the CAA. 53 FR 40656. The EPA decided to establish NO_2 increments following the pattern enacted by Congress for the PM and SO_2 increments. These increments establish maximum increases in ambient air concentrations of NO_2 (expressed in micrograms per cubic meter ($\mu g/m^3$)) allowed in a PSD area over a baseline concentration. Emissions increases from both stationary and mobile sources are considered in the consumption of the NO_2 increments which are implemented through the PSD permitting provisions in 40 CFR parts 51 and 52.

The increment system for NO_X includes the three-tiered area classification system established by Congress in section 163 for increments of SO_2 and PM. Class I areas (including certain national parks and wilderness areas) were designated by Congress as areas of special national concern, where the need to prevent air quality deterioration is the greatest. Consequently, the allowable level of incremental change in air quality is most stringent in Class I areas. Class II areas are all areas not specifically designated in the Act as Class I areas. The increments of Class II areas are less stringent than the Class I areas and allow for a moderate degree of emissions growth. Class III areas are areas originally designated as Class II, that have been redesignated by States where higher levels of industrial development (and emissions growth) are desired, and are allowed to have the greatest increase in ambient concentration. There have been no Class III redesignations to date.

EPA based the levels of the increments for each area classification on the percentages of the NAAQS that Congress used to set the increments for SO_2 and PM. Congress used different percentages of the NAAQS to calculate the Class I increments for PM and SO_2. For the NO_2 increments, we chose the percentage that Congress used for SO_2. This decision yielded a lower Class I increment for NO_2 than would have resulted by using the PM percentage.

The existing Class I NO_2 increment is 2.5 $\mu g/m^3$ (annual average), a level of 2.5 percent of the NO_2 NAAQS. It is based on the Class I SO_2 increment, which is set at the same percentage (2.5 percent) of the SO_2 annual NAAQS. The Class II NO_2 increment is 25 $\mu g/m^3$ · 25 percent of the NO_2 NAAQS. The Class III NO_2 increment is 50 $\mu g/m^3$ · 50 percent of the NO_2 NAAQS.

EPA believed that these increments satisfied the standard in section 166(d), which requires that PSD regulations for NO_X be ''at least as effective'' as the existing section 163 increments in preventing significant deterioration of air quality due to emissions of NO_X. The EPA thought that reflecting the same percentages of the NAAQS as the SO_2 and PM increments would be at least as stringent as the statutorily established increments in terms of ambient air quality impacts. In the preamble to these regulations, EPA explained that the increments satisfied the section 166(c) criteria by providing numerical measures against which permit applications may be evaluated and stimulating improved control technology. The EPA relied on the establishment of a Class I NO_2 increment and the provisions for protecting AQRVs in section 165(d)(2) (providing a role for the Federal Land Manager (FLM) in the review of certain PSD permits prior to issuance) to protect air quality values affected by NO_X. The EPA further reasoned that these ambient concentration percentages could be used as a proxy for all the PSD purposes set forth in the statute, thus satisfying the ''goals and purposes set forth in section 101 and section 160'' incorporated by reference in section 166(c).

C. Court Decision

In 1988, the Environmental Defense Fund (now Environmental Defense, or ''ED'') filed suit in the U.S. Court of Appeals for the District of Columbia Circuit against the Administrator (*Environmental Defense Fund, Inc.* v. *Reilly*, No. 88–1882). ED argued that EPA failed to sufficiently consider several of the section 166(c) criteria. ED also argued that EPA's approach failed to satisfy the ''at least as effective'' standard under section 166(d) because EPA did not compare the NO_2 increments (set only for the annual averaging period) to the 24-hour and 3-hour increments for SO_2.

In its 1990 opinion, the court held that EPA had satisfied its obligation under section 166(d) but had not sufficiently considered whether different increments should be established under the criteria in section 166(c). More specifically, the court held that EPA's percentage-of-NAAQS approach for determining the increments satisfied the duty under section 166(d) to promulgate regulations for NO_X that were ''at least as effective'' as the increments in section 163. *Id.* at 188. As to subsection (c), however, the court held that EPA's approach of using the percentage ambient concentrations as a ''proxy'' for meeting the subsection (c) criteria overlooked the language of subsection (c), and turned subsection (c) into an option, despite its mandatory wording. Thus, the court remanded the case to EPA ''to develop an interpretation of section 166 that considers both subsections (c) and (d), and if necessary to take new evidence and modify the regulations.'' *Environmental Defense Fund* v. *EPA*, 898 F.2d 183, 190 (DC Cir. 1990) (''*EDF* v. *EPA*'').

The court identified three steps that EPA took to develop PSD regulations for NO_X under section 166. The first two steps reflected EPA's decisions to adopt regulations for NO_X that employed increments with an area classification system to implement the PSD program for NO_X. These first two steps were not controverted in *EDF* v. *EPA*, 898 F.2d at 184–85. The dispute in the *EDF* case involved only the third step, which was EPA's action to establish several characteristics of the increments by reference to the NAAQS. The

characteristics that EPA derived from the NAAQS were (1) the level of the increments using the percent-of-NAAQS-approach; (2) the time period (annual average) for the increments; and (3) the pollutant (NO_2) for which the increments were established. Since these three characteristics of the increments were the only issues controverted in the *EDF* v. *EPA* case, EPA is revisiting only these questions to satisfy the court's remand. However, we also believe it would be beneficial to consider alternative approaches to an increment system and thus are voluntarily reconsidering the first two steps in the process of developing pollutant-specific PSD regulations for NO_X.

In *EDF* v. *EPA*, the court held that, in light of the criteria in section 166(c), EPA could not use the NAAQS as the sole basis for deriving increments. However, the court held that using the NAAQS as the basis for deriving increments was permissible in determining whether the ''at least as effective'' standard under subsection (d) was met. But, with respect to subsection (c), the court stated: ''we find nothing in the language or legislative history suggesting that this duty [consideration of the goals and purposes of the statute] could be satisfied simply by referencing the NAAQS.'' *Id.* at 190. The court noted the differences between the health and welfare criteria on which the NAAQS are based (sections 108 and 109) and the ''goals and purposes'' of the PSD program set forth in section 160, highlighting the special value the PSD program places on protection of national parks. At the same time, the court recognized that ''[n]evertheless, the ambient standards are the basic measure of air quality under the [Clean Air Act], and the controlling standards by no means exclude any value that is the subject of focus under the PSD provisions.'' *Id.* at 176 (internal citations and quotations omitted). In other words, the court observed that NAAQS remain relevant to the inquiry under section 166 because they are a basic measure of air quality and may indirectly reflect some consideration, among others, of the same values that are the focus of the PSD program. However, the court indicated that we could not rely solely upon the NAAQS to comply with section 166 because this provision directs us to focus on the specific goals and purposes of PSD which are not necessarily the factors that determine the NAAQS under section 109.

Thus, the court directed EPA to reconsider the characteristics of the existing increments in light of the criteria in both sections 166(c) and 166(d). The court indicated that one permissible interpretation for harmonizing subsections (c) and (d) would be to construe subsection (d) as a ''contingent safe harbor'' or presumptive baseline. Thus, increments derived from the NAAQS could be authorized if the agency were to undertake additional analysis and make a reasoned determination that the criteria under subsection (c) do not call for different increments than the ''safe harbor'' that meets the criteria in subsection (d) of the statute.

On July 31, 2003, Environmental Defense (ED) petitioned the court to order EPA to take action in accordance with the court's earlier opinion. ED and EPA reached a settlement in which EPA agreed to propose and promulgate a rule to fully comply with the court's remand order. The settlement obligated the Agency to issue a proposal no later than September 30, 2004, and a final rule no later than September 30, 2005. However, in September 2004, EPA and ED agreed to extend the proposal deadline until February 14, 2005 in order to allow EPA more time to consider alternatives to the increment approach.

IV. Legal Authority

Section 166(a) of the Act directs EPA to develop pollutant-specific regulations to prevent the significant deterioration of air quality. Sections 166(c) and 166(d) of the Act provide more detail on the contents of those regulations. To develop pollutant-specific regulations under subsection (a), EPA must establish an overall regulatory framework for those regulations and fill in many specific details around that framework.

EPA interprets section 166 to require that its PSD regulations for a particular pollutant must, as a whole, satisfy the criteria in section 166. Thus, we believe our obligations under section 166(c) of the Act are satisfied when the entire body of pollutant-specific regulations for NO_X (including the overall regulatory framework and the specific details) satisfy the criteria in sections 166(c) and 166(d) of the Act.

In the case of NO_X, EPA established that overall framework in the 1988 rulemaking and employed NO_2 increments and an area classification system for these regulations.[3] This increment system for NO_X was modeled on the system that Congress had already established for PM and SO_2. Within this overall system, EPA then filled in specific details, including defining the characteristics of the increments to be developed for NO_X.

The dispute in *EDF* v. *EPA* involved only EPA's decisions to define the characteristics of the increments for NO_X in relation to the NAAQS. Since the basic increments and area classification system in EPA's PSD regulations for NO_X were not controverted, EPA does not interpret the court's opinion to require that the Agency reconsider these fundamental aspects of its PSD regulations for NO_X. Thus, EPA believes that it is only required at this time to reconsider the level, time period, and pollutant used in establishing increments in its PSD regulations for NO_X.

However, EPA is also requesting comment in this proposed rule on alternatives to the current increment system for NO_X. Based on the input from various stakeholders, EPA is voluntarily reconsidering whether the increment system is the most effective mechanism for fulfilling our obligations to protect parks and other attainment areas under section 166 of the Act. Thus, as alternatives to our proposing to retain the existing increment system for NO_X, we are also proposing to allow the States to implement an EPA-administered cap and trade program or a State planning approach to fulfill our obligation to establish pollutant-specific PSD regulations for NO_X.

A. Interpretation on Remand: Harmonizing Sections 166(c) and 166(d) of the Clean Air Act

We propose to harmonize the criteria set forth in sections 166(c) and 166(d) by using the ''contingent safe harbor'' approach discussed by the Court. We believe this is an appropriate reading of the statute. Subsection (c) describes the kinds of measures to be contained in the regulations to prevent significant deterioration of air quality called for in section 166(a) and specifies that these regulations are to ''fulfill the goals and purposes'' set forth in sections 160 and 101 of the Act. Then, under subsection (d), to ''fulfill such goals and purposes,'' EPA must promulgate ''specific measures at least as effective as the increments established in section 7473 of this title [section 163 of the Act].'' 42 U.S.C. 7476. Subsection (d) indicates that these specific measures may include increments but are not necessarily required to contain increments. Thus, subsection (d) can be construed to require that EPA identify a minimum level of effectiveness, or safe

[3] Under section 166(e) of the Act, a State is authorized to develop measures to prevent significant deterioration of air quality other than an area classification scheme for pollutants other than PM and SO_2 if the implementation plan contains other provisions that the Administrator finds will ''carry out the purposes in section 160 at least as effectively as an area classification plan for such pollutant.''

harbor, for the body of pollutant-specific PSD regulations adopted under section 166. Then, subsection (c) may be read to require that EPA conduct further review to determine whether, based on the criteria in subsection (c), EPA's pollutant-specific PSD regulations under section 166 should contain measures that deviate from the minimum ''safe harbor'' identified under subsection (d). As in 1988, we construe subsection (d) to require that the measures be ''at least as stringent'' as the statutory increments set forth in section 163.

In an instance where EPA opts to employ increments in its section 166 PSD regulations for a specific pollutant, we interpret this language to require that EPA, at minimum, establish increments that are consistent with the statutory increments established by Congress in that each increment (Class I, II, or III) is established in relation to the NAAQS and is set (1) at an equivalent percentage of the NAAQS as the statutory increments; (2) for the same pollutants as the NAAQS; and (3) for the same time period as the NAAQS. Under an increment approach, EPA would then conduct further review to determine whether the ''safe harbor'' increments, in conjunction with other measures adopted under the PSD program and section 166, sufficiently fulfill the criteria in subsection (c). If, after weighing and balancing the criteria set forth in subsection (c) (and the incorporated goals and purposes of the CAA in section 101 and the PSD program in section 160), EPA determines that the ''safe harbor'' increments and other measures do not satisfy these criteria, then EPA would need to develop additional regulations which may include different increments, additional increments, or additional measures to satisfy the section 166(c) criteria. If EPA determines that the ''safe harbor'' increments and associated measures satisfy the criteria in subsection (c), then it need not adopt different or additional increments or other measures as part of its PSD regulations under section 166.

B. Interpretation on Remand: The Section 166(c) Factors

EPA interprets section 166(c) of the Act to establish eight factors to be considered in the development of PSD regulations for the pollutants covered by this provision. Section 166(c) lists three specific criteria that EPA must consider in the development of PSD regulations for the pollutants covered by this provision. These three criteria indicate that PSD regulations for specific pollutants should provide (1) specific numerical measures for evaluating permit applications; (2) a framework for stimulating improved control technology; and (3) protection of air quality values. 42 U.S.C. 7476(c). In addition, section 166(c) directs that EPA's PSD regulations for specific pollutants ''fulfill the goals and purposes'' set forth in sections 101 and 160 of the Act. 42 U.S.C. 7476(c). We interpret this phrase to incorporate the five goals and purposes of the PSD program set forth in section 160 as factors that EPA must consider to comply with section 166(c) of the Act.

The Agency's view is that PSD measures that satisfy the specific goals and purposes of section 160 also satisfy the more general purposes and goals identified in section 101 of the Act. The overall goals and purposes of the CAA listed in sections 101(b) and 101(c) are general goals regarding protecting and enhancing the nation's air resources and controlling and preventing pollution. Because these broad goals are given more specific meaning in section 160, EPA does not believe it is necessary to consider them in detail when evaluating whether PSD regulations satisfy the criteria in section 166(c). In addition, the court's inquiry in *EDF* v. *EPA* focused exclusively on the specific goals and purposes of the PSD program set forth in section 160. However, because the broad purpose of the CAA set forth in section 101(b)(1) provides some additional guidance as to the meaning of the more specific PSD goal set forth in section 160(3), we discuss section 101(b)(1) further below in this limited context of interpreting one of the factors applicable under section 166.

Thus, EPA construes the term ''fulfill the goals and purposes,'' as used in section 166(c), to mean that EPA should apply the goals and purposes listed in section 160 as factors applicable to pollutant-specific PSD regulations established under section 166. The EPA's PSD regulations for NO_X should therefore be consistent with the three criteria listed in section 166(c) and the five goals and purposes listed in section 160 of the Act.

As noted above and explained further below, for the increment option in this proposal, we believe many of the eight factors applicable under section 166(c) are fulfilled by elements of the regulatory framework that were established in 1988 and not controverted in *EDF* v. *EPA*. We discuss further below how the proposed cap and trade and State planning options also satisfy these factors. The following sections provide more detail on how we propose to interpret and apply several of these factors in developing pollutant-specific PSD regulations under section 166 of the Act.

1. Numerical Measures by Which Permit Application May Be Evaluated

The first criterion in section 166(c) states that pollutant-specific PSD regulations must contain ''specific numerical measures against which permit applications may be evaluated.'' We believe an increment would clearly satisfy this criterion but do not interpret section 166 to require that we employ an increment system for every pollutant listed in this section. Section 166(d) states that our pollutant-specific PSD regulations ''may contain'' increments or ''other measures.'' We interpret this provision to allow EPA or the States to employ approaches other than an increment system, so long as such an approach fulfills the ''specific numerical measures'' criterion in section 166(c).

While an increment is the clearest example of a specific numerical measure for evaluating permit applications because of the model Congress established for PM and SO_2, the Act gives EPA the discretion to employ other types of numerical measures in PSD regulations for the other pollutants listed in section 166, such as ''nitrogen oxides.'' An increment represents the allowable marginal increase in air pollutant concentration (measured in $\mu g/m^3$. Under this approach, the permit applicant must conduct modeling to determine whether or not its emissions on a mass basis (*e.g.*, tons) will result in an air quality concentration increase in excess of the increment. However, another way to provide a numerical measure for evaluating permits could be, for instance, to establish a maximum allowable level of emissions on a mass basis (*e.g.*, tons).

Under the latter approach, permit applicants would have to show that their emissions will not cause total emissions in a given area to exceed the maximum allowable level of emissions established for that area. Under a State planning approach, the State could monitor the inventory of emissions from all sources (new and existing) and only issue a permit if the applicant's project would not cause emissions to exceed allowable levels. Using a cap and trade approach, EPA or the States could adopt regional or statewide caps on emissions of specific sources that could then be allocated to States or individual sources covered by the cap in the form of a budget or allowance. Individual permit applications would be evaluated against the cap by determining whether the applicant held a sufficient number of allowances.

2. Protect Air Quality Values

The third criterion in section 166(c) broadly states that the regulations ''shall provide * * * protection of air quality values'' without identifying the air quality values to be protected. Legislative history indicates that the term ''air quality value'' was used interchangeably with the term ''air quality related value'' (AQRV) regarding Class I lands.[4] Thus, we believe the term ''air quality values'' should be given the same meaning as ''air quality related values.''

The Act does not define AQRV, except to note that it includes visibility. Section 165(d)(1)(B). However, the legislative history provides the following explanation of AQRV:

> The term ''air quality related values'' of Federal lands designated as class I includes the fundamental purposes for which such lands have been established and preserved by the Congress and the responsible Federal agency. For example, under the 1916 Organic Act to establish the National Park Service (16 U.S.C. 1), the purpose of such national park lands ''is to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.''

S. Rep. 95–127 at 36, reprinted at 3 Legislative History at 1410.

Thus, in 1996, the Agency proposed the following definition of AQRV:

> * * * visibility or a scenic, cultural, physical, biological, ecological, or recreational resource that may be affected by a change in air quality, as defined by the Federal Land Manager for Federal lands, or by the applicable State or Indian Governing Body for nonfederal lands.

61 FR 38250, 38322 (July 23, 1996). The reference to State or Indian Governing Body was to acknowledge that Congress recognized in section 164(e) that such areas also may have AQRVs to be taken into consideration.

[4] *See* S. Rep. 95–127, at 12, reprinted at 3 Legislative History at 1386, 1410 (describing the goal of protecting ''air quality values'' in ''Federal lands—such as national parks and wilderness areas and international parks,'' and in the next paragraph and subsequent text using the term ''air quality related values'' to describe the same goal); id. at 35, 36 (''The bill charges the Federal land manager and the supervisor with a positive role to protect air quality values associated with the land areas under the jurisdiction of the [FLM]'' and then describing the statutory term as ''air quality related values''). H.R. Report 95–564 at 532 (describing duty of Administrator to consider ''air quality values'' of the tribal and State lands in resolving an appeal of a tribal or State redesignation, which is described in the final bill as ''air quality related values'').

3. Protect Public Health and Welfare From Adverse Effects Notwithstanding Attainment of NAAQS

The first goal and purpose in section 160 of the Act sets forth a broad mission ''to protect public health and welfare from any actual or potential adverse effects which in the Administrator's judgment may reasonably be anticipated to occur notwithstanding attainment and maintenance of all national ambient air quality standards.'' The precise meaning of this goal is somewhat ambiguous because it appears to mirror the legal standards applicable to the promulgation of the primary and secondary NAAQS. Under section 109(b) of the Act, the primary NAAQS must ''protect the public health'' with an adequate margin of safety (section 109(b)(1)) and the secondary NAAQS must ''protect the public welfare from any known or anticipated adverse effects'' associated with ambient concentrations of the pollutant (section 109(b)(2)). The term ''welfare'' is defined in the Act to include ''effects on soils, water, crops, vegetation, man-made materials, animals, wildlife, weather, visibility, and climate.'' Section 302(h).

When applied as a relevant factor for the content of PSD regulations for specific pollutants under section 166(c) of the Act, we do not construe this language in section 160 to require EPA to conduct a full NAAQS review every time it establishes PSD regulations for a pollutant. A NAAQS review is a rigorous scientific process,[5] and Congress gave EPA 5 years to complete this review. 42 U.S.C. 7409(d)(1). However, under section 166(a) of the Act, Congress gave EPA only 2 years to establish PSD regulations for specific pollutants. Furthermore, in cases where NAAQS were not established as of 1977, section 166(a) gave EPA 2 years after the establishment of a NAAQS to promulgate PSD regulations. This indicates that Congress intended for PSD regulations to be developed shortly after establishment of a NAAQS and before completion of the next NAAQS review in 5 years. As a result, we do not believe it is reasonable to interpret this factor to require such a rigorous review to establish PSD regulations. In addition, as discussed further below, we believe these statutory provisions indicate that Congress intended for EPA to develop PSD rules using the research compiled when establishing or reviewing a NAAQS.

In the specific context of the PSD program, we construe this charge to ''protect public health and welfare'' to require EPA to evaluate whether adverse effects may occur as a result of increases in pollution to ambient levels below the NAAQS. If such effects may occur in some areas of the country, then EPA must consider how to establish PSD regulations that protect public health and welfare against such effects where they may occur. However, we do not interpret the PSD program to require regulations that eliminate all adverse effects that may result from increases in pollution in attainment areas. The PSD program is, as its title suggests, designed to prevent ''significant deterioration'' from a baseline concentration. S. Rep. 95–127 at (3 LH at 1385) (''This legislation defines 'significant deterioration' in all clean air areas as a specified amount of additional pollution. This definition is intended to prevent any major decline in air quality currently existing in clean air areas * * *''). That is, some decline in air quality (relative to the baseline air quality concentration) is permissible for any particular area of the country that is currently achieving the NAAQS, as long as it is not ''significant.'' [6]

[5] The NAAQS process begins with the development of ''air quality criteria'' under section 108 for air pollutants that ''may reasonably be anticipated to endanger public health or welfare'' and that come from ''numerous or diverse'' sources. Section 108(a)(1). ''Air quality criteria'' must reflect the latest scientific knowledge on ''all identifiable effects on public health or welfare'' that may result from a pollutant's presence in the ambient air. *Id.* § 7408(a)(2). The scientific assessments constituting air quality criteria generally take the form of a ''criteria document,'' a rigorous review of all pertinent scientific studies and related information. The EPA also develops a ''staff paper'' to ''bridge the gap'' between the scientific review and the judgments the Administrator must make to set standards. *See Natural Resources Defense Council* v. *EPA* (''*NRDC*''), 902 F.2d 962, 967 (DC Cir. 1990). Both documents undergo extensive scientific peer-review as well as public notice and comment. *See e.g.,* 62 FR 38654/1–2.

For each NAAQS review, the Administrator must appoint ''an independent scientific review committee composed of seven members of the National Academy of Sciences, one physician, and one person representing State air pollution control agencies,'' known as the Clean Air Scientific Advisory Committee (CASAC). Section 109(d)(2)(A). CASAC is charged with recommending revisions to the criteria document and NAAQS, and advising the Administrator on several issues, including areas in which additional knowledge is required to apprise the adequacy and basis of existing, new or revised NAAQS. Section 109(d)(2)(B), (C).

[6] Of course, if the area is designated nonattainment pursuant to section 107 of the Act because the air quality is not attaining the NAAQS, the PSD increments do not apply. Rather, reductions in emissions must be implemented to bring the area's air quality into attainment with the NAAQS, and, in the case of new sources, sufficient offsetting emissions reductions must be obtained. Sections 172(c) and 173(a) of the Act.

4. Ensure Economic Growth Consistent With Preservation of Existing Clean Air Resources

The third goal and purpose set forth in section 160 is to ''insure that economic growth will occur in a manner consistent with the preservation of existing clean air resources.'' To some extent, this goal of the PSD program more specifically articulates the broader purpose of the CAA, described in section 101(b)(1) of the Act, to ''protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population.'' 42 U.S.C. 7401(b)(1). Sections 160(3) and 101(b)(1) are similar in that both sections reflect the goal to simultaneously protect air quality and to foster economic growth. Thus, in interpreting the meaning of section 160(3) when used as a factor applicable under section 166(c), we also consider the broader purpose of the Act set forth in section 101(b)(1).

The first part of this goal of the PSD program set forth in section 160(3) (''to insure that economic growth will occur'') makes clear that the PSD program is not intended to stifle economic growth. However, the second part of this goal indicates that economic growth should ''occur in a manner that is consistent with the preservation of existing clean air resources.'' 42 U.S.C. 7470(3). Section 101(b)(1) indicates that these goals are not necessarily inconsistent because Congress sought to ''protect and enhance the Nation's air resources so as to promote the public health and welfare and the productive capacity of [the Nation's] population.'' Thus, when considered in light of the purpose of the Act set forth in section 101(b)(1), it is clear that section 160(3) establishes the goal of the PSD program to balance the promotion of economic growth and the protection of clean air resources.

Therefore, when applied as a guiding factor for the content of pollutant-specific PSD regulations under section 166(c), we construe section 160(3) to establish a balancing test between fostering economic growth and protecting: (1) AQRVs; (2) the public health and welfare from adverse effects, and (3) the air quality in parks and special areas. When EPA employs an area classification system in its section 166 regulations, all of these factors must be weighed in each type of area (Class I, Class II, and Class III). However, the weight given to each factor may be more or less depending on the area involved. For example, economic growth may be the most important factor in a Class III area, but our PSD regulations for such areas should offer some level of protection for existing clean air resources. In a Class I area, our PSD regulations should allow some level of economic growth, even though preservation of existing clean air resources may be the dominant value for these areas.

C. EPA's Authority To Fulfill Section 166 Requirements by Granting States Flexibility To Adopt Alternative Measures in Their SIPs

Under section 110(a)(1) of the Act, each State is required to submit a State Implementation Plan (SIP) which provides for implementation, maintenance, and enforcement of the primary and secondary NAAQS established by EPA. All areas are required to submit SIPs within certain timeframes, and those SIPs must include specified provisions identified under section 110(a)(2) of the Act. SIPs for nonattainment areas are required to include additional specified control requirements, as well as controls providing for attainment of any revised NAAQS and periodic reductions providing ''reasonable further progress'' in the interim (*see* section 172(c)). For attainment areas subject to the PSD program, section 161 of the Act requires that ''each applicable implementation plan shall contain emissions limitations and such other measures as may be necessary, as determined under regulations promulgated under this part, to prevent significant deterioration of air quality in each region * * * designated * * * as attainment or unclassifiable.'' Thus, we have interpreted sections 166 and 161 to collectively require that EPA promulgate a specific PSD regulatory program for each pollutant identified in section 166 (such as the existing NO_2 increments and associated regulations), and then to require the States to adopt that program as part of their SIPs.

We view the PSD program to be a growth management program that is intended to limit the deterioration of air quality beyond baseline levels that may be caused by the construction of major new and modified sources. We do not interpret the PSD provisions to authorize us to direct States in their SIPs to achieve reductions in emissions from existing sources. However, we recognize that the growth management goals of PSD may also be fulfilled when the States adopt controls on existing sources that would reduce emissions and allow growth from new sources and major modifications to existing sources without causing significant deterioration. Under the increment approach, we have previously recognized that States may choose to require reductions from existing sources in order to expand the increments and allow for more growth under the PSD program.[7] However, we have never required States to do so because, in the absence of an increment violation, we do not believe section 166 and other provisions in part C give us the legal authority to mandate such reductions for PSD purposes. Consistent with these authorities, in addition to requiring States to adopt a specific PSD program for NO_X promulgated under section 166 as part of their SIPs, we believe we could also give States the flexibility to develop their own programs that EPA could review to determine if the State program meets the requirements of section 166(c) and 166(d) of the Act. If a State adopts a program that meets the criteria of sections 166(c) and 166(d), we believe section 166 would give us the authority to allow the State to implement that program in lieu of any specific program (such as one that may include increments) that EPA might adopt under section 166. Thus, we think one option for fulfilling our obligation to promulgate pollutant-specific regulations for NO_X under section 166 would be to adopt regulations that establish a procedure for States to submit their own programs to satisfy section 166. These regulations would contain criteria that would guide EPA's evaluation of whether a State program contains ''other measures'' that are sufficient to satisfy the requirements of sections 166(c) and 166(d) and to operate in lieu of an EPA-promulgated program.

V. Health and Welfare Effects of NO_X

''Nitrogen oxides'' is the generic term for a group of highly reactive gases that contain nitrogen and oxygen in varying amounts. The high-temperature combustion of fossil fuels, primarily from electric utilities and mobile sources, is a major contributor to the formation of nitric oxide (NO) and NO_2. Most NO_X from combustion sources are emitted as NO (about 95 percent); the remainder are primarily NO_2. Emissions of NO are rapidly oxidized in the atmosphere to produce even more NO_2.[8]

Nitrogen oxides[9] play a major role in the formation of ozone and PM

[7] 43 FR 26380, 26381 (June 19, 1978) (''States can expand the available PSD increments by requiring emissions reductions from existing sources.'')

[8] Because NO is readily converted to NO_2 in the atmosphere, the emissions of NO_X reported by EPA assumes NO_X in the form of NO2. In predicting ambient impacts that may result from emissions of NO_X, all NO_X initially is assumed to be emitted from sources as NO_2. (40 CFR part 50 app W sec. 6.2.4.)

[9] Seven oxides of nitrogen are known to occur in the atmosphere: nitric oxide (NO), nitrogen dioxide

(nitrogen-bearing particles and acid aerosols), each with their own set of adverse health and welfare effects.[10] For example, nitrate particles contribute to visibility impairment and regional haze and nitrates are a major component of acidic deposition. Emissions of NO_X also contribute to nitrates in drinking water, nitrogen loadings to aquatic (eutrophication) and terrestrial (nitrification)[11] ecosystems, toxics, stratospheric ozone depletion, and global climate change.

Reduced nitrogen compounds, such as ammonia (NH_3) (derived largely from emissions from livestock waste as well as those associated with the application of fertilizer to the ground) and ammonium (NH_4¶), are also important to many of the public health and environmental impacts associated with atmospheric nitrogen compounds. It is important to recognize that some forms of NO_X are produced naturally (via lightning, soils, wildfires, stratospheric intrusion, and the oceans) and also can play a role in the cycling of nitrogen through the ecosystem. Such varied origins of nitrogen in the atmosphere add to the difficulty of determining the specific source contributing to the total nitrogen concentration and, therefore, make it difficult to design an emissions control strategy for reducing the nitrogen contribution in a particular area.

A. Scope of Effects EPA Proposes To Consider

In order to evaluate our pollutant-specific PSD regulations for NO_X under section 166(c), we must first define the scope of effects that are relevant to our analysis. Although emissions of NO_X contribute to a range of direct and indirect effects on health, welfare, and AQRVs, we believe our review should focus on those effects that were considered by EPA in the development of the NAAQS for NO_2.

EPA believes that this approach is appropriate because the need to develop PSD rules is tied to the existence of the NAAQS. As the court in *EDF* v. *EPA* acknowledged ''the ambient standards are the basic measure of air quality under the [Clean Air Act] and the controlling standards by no means *exclude any* value that is the subject of focus under the PSD provisions.'' 898 F.2d at 190 (emphasis in original). Thus, the health and welfare effects that were evaluated by EPA when it established the NAAQS should also be considered when EPA establishes regulations under section 166 to protect against significant deterioration of air quality from NO_X emissions.

This view is supported by the provisions of section 166 which make clear that EPA is to establish PSD regulations (including an increment, if appropriate) under this provision after the establishment of a NAAQS for the applicable pollutants. In 1971, EPA first established a single standard for NO_2 as both the primary and secondary NAAQS addressing NO_X. 36 FR 8186 (April 30, 1971). Congress then passed section 166 of the Act in 1977 and gave EPA 2 years to complete its study and promulgate PSD regulations for ''nitrogen oxides.'' 42 U.S.C. 7476(a). In addition, for pollutants for which a NAAQS had not been promulgated by August 7, 1977, Congress gave EPA 2 years from the promulgation of such standards to establish PSD regulation under section 166 of the Act. *Id.* The establishment of PSD regulations which may include increments must necessarily follow the NAAQS because the NAAQS provides the benchmark against which we are to judge ''significant deterioration'' of air quality.

Although we propose to use the range of effects considered in setting the NAAQS to define the bounds of our analysis, we are also mindful that the court in *EDF* v. *EPA* rejected use of the NAAQS as the ''sole basis'' for deriving the increment. 898 F.2d at 190. However, in this action, we propose to focus not simply on the level of the NAAQS as a legal standard, as we did in 1988, but to further consider the health and welfare effects that EPA evaluated to establish the NAAQS. Rather than considering those effects in relation to the standards set forth in section 109, we now evaluate those effects in relation to the factors in sections 166(c) and 160 of the Act. The court held that we could not rely solely on the NAAQS itself to establish increments because of the emphasis in sections 166(c) and 160 on special considerations—such as national wilderness areas—whose special values may be reflected in the NAAQS but are not necessarily the only factors that determine the level of the NAAQS. *See* 898 F.2d at 190. Thus, within the field of effects that EPA found relevant when establishing the NAAQS, we narrow our inquiry here to focus on the special considerations of PSD and those effects that may occur in some areas notwithstanding attainment of the NAAQS.

As noted above, both photochemical oxidants (ozone)[12] and PM[13] are formed in part by reactions of NO_X emissions with other pollutants in the atmosphere. Thus, the question arises whether the PSD regulations for NO_X must also address the ozone and PM impacts. Because section 166(a) directs EPA to separately promulgate pollutant-specific PSD regulations for photochemical oxidants (*i.e.*, ozone), we believe the duty to promulgate increments for ''nitrogen oxides'' does not include consideration of ozone.[14]

We believe that Congress did not intend for EPA to establish duplicative PSD regulations. Several pollutants are identified in section 166(a) for the promulgation of regulations to ''prevent the significant deterioration of air quality which would result from the emissions of such pollutants.'' In addition to ''nitrogen oxides,'' the statute lists ''photochemical oxidants'' and any pollutants for which NAAQS are later promulgated. Increments for PM_{10} are separately authorized in section 166(f).

In addition, we believe it would be unreasonable to establish pollutant-specific PSD regulations to protect against the effects of ozone without considering the other major precursor

(NO_2), nitrate (NO_3·), nitrous oxide (N_2O), dinitrogen trioxide (N_2O_3), dinitrogen tetroxide (N_2O_4) and dinitrogen pentoxide (N_2O_5).

[10] The term ''welfare'' is defined in the Act to include, *inter alia*, ''effects on soils, water, crops, vegetation, man-made materials, animals, wildlife, weather, visibility, and climate.'' Section 302(h).

[11] It should be noted that nitrification can be a beneficial process in many instances. Nitrification (a bacterially driven process that converts ammonium to nitrite) can occur productively in manure piles, during sewage processing, in soil, and in marine environments in the oxygenated water column above anaerobic sediments or within the surface of oxidized layers of sediments. Nitrification becomes adverse when it is accompanied by ''nitrogen saturation,'' a condition that can arise in terrestrial ecosystems from the long-term chronic effects of nitrogen deposition or loading, where nitrogen inputs into an ecosystem exceed the ability of plants and soil organisms to utilize it so that it begins to leach nitrite out of the soil into streams and other water bodies.

[12] Ozone is the oxidant found in the largest quantities in the atmosphere. The EPA promulgated NAAQS for photochemical oxidants in 1971. The chemical designation of the standard was changed in 1979 from ''photochemical oxidants'' to ozone. *See* 44 FR 8202 (February 8, 1979).

[13] Particulate matter (PM) is composed of directly emitted particles and secondarily formed particles. Secondary particulates are produced from gaseous pollutants, mainly NO_X, SO_2, ammonia, and some VOCs. Emissions of NO_X can result in the formation of particulate nitrates whose contribution to fine particles varies depending on geographic location and other criteria.

[14] In the 1988 final preamble adopting the NO_2 increments, we gave limited consideration to whether limiting increases of NO_X emissions would worsen ozone ambient concentrations, in response to comments raising this issue. 53 FR at 40668. We did not, however, attempt to set the NO_2 increments to address ozone public health and welfare impacts, nor do we believe that is required here, for the reasons stated above. Increments for ozone have not been established because of the technical difficulty associated with predicting ambient concentration changes resulting from a single stationary source. 61 FR 65764, 65776 (Dec. 13, 1996).

for ozone—volatile organic compounds. Any PSD regulation attempting to mitigate the ozone impacts from NO_X, notwithstanding the ozone NAAQS, would be unfounded without also addressing this significant component. Thus, we believe the contribution of NO_X to the formation of ozone should be considered only in the context of the establishment of pollutant-specific PSD regulations for ozone.

For similar reasons, we believe the duty to promulgate PSD regulations for ''nitrogen oxides'' under section 166 of the Act does not include a requirement to consider effects attributable to PM. Instead, Congress established increments for PM (then measured as total suspended particulate or TSP) and authorized EPA to replace the TSP increments with increments for PM_{10}. *See* CAA sections 163 and 166(f). Thus, we believe it would be inappropriate to promulgate pollutant-specific regulations for NO_X based on its transformation into PM. Regulations for NO_X that address PM effects in such a narrow manner (*i.e.*, nitrates [15] only) could potentially affect the stringency of the PM increments and considerations regarding the baseline concentration and baseline date. Additionally, like ozone, PM has several precursors, of which NO_X is only one. Any PSD strategy for PM should consider both direct PM emissions and all of the regulated precursors instead of placing disproportionate emphasis on only one component of the pollutant. In a separate notice, EPA intends to consider options for regulating precursors to $PM_{2.5}$.

B. Data Included in Review

Our review of the available scientific and technical information focuses primarily on the health and welfare information contained in the 1993 Criteria Document for NO_X and the 1995 OAQPS Staff Paper used for the periodic review of the NO_2 NAAQS completed in 1996. As described below, we have also considered information contained in more recent studies, particularly concerning the types of effects on ecosystems associated with atmospheric nitrogen deposition because the Act does place an emphasis on protection of air quality values and national parks and other special areas of national or regional interest.

The court's opinion in *EDF* v. *EPA* did not indicate what data set EPA should use in its review under the statutory criteria in sections 166(c) and 166(d). When EPA promulgated the NO_2 increments in 1988, the health and welfare information used for completing the periodic review of the NO_2 NAAQS (50 FR 25532, June 19, 1985) was contained in EPA's 1982 Criteria Document for NO_X. The same document represented the Agency's latest official documentation of health and welfare effects when the 1988 increments were challenged by Environmental Defense.

In general, we believe that it is appropriate to rely on the latest information used for promulgating or reviewing the NAAQS in order to evaluate the effectiveness of a set of increments or other PSD regulations for the same pollutant. This is because, under normal circumstances, the Act provides that EPA promulgate new PSD regulations under section 166, including new increments if appropriate, within 2 years from the promulgation of any NAAQS after 1977. 42 U.S.C. 7476(a). In such instances, the health and welfare information used for the setting of the NAAQS would also be ''current'' for purposes of establishing pollutant-specific PSD regulations.

The record of information used for the most recent periodic review of the NO_2 NAAQS includes the 1993 Criteria Document and 1995 Staff Paper. This information was used in 1996 to carry out the required periodic review of the NO_2 NAAQS and to conclude that the existing primary and secondary NO_2 NAAQS should be retained in the original form. 61 FR 52852 (October 8, 1996).

The most recent review of the NO_2 NAAQS contains information that was not part of the scope of the previous NAAQS review. Specifically, the 1993 Criteria Document and 1995 Staff Paper considered as part of the secondary standard review ''short- and long-term effects of nitrogen deposition on biological, physical and chemical components of ecosystems and the resulting effect of changes to these components on ecosystem structure and function as well as the traditional issue of visibility impairment, and materials damage.'' The expanded scope is particularly relevant to the types of effects that should be used to consider the effectiveness of the PSD increments.

While we believe that it is in keeping with congressional intent to rely in the ordinary case on only the information used in the most recent NAAQS review when establishing pollutant-specific PSD regulations under section 166, the situation we face here with NO_X is unique. Considerable time has passed since the 1996 review of the NO_2 NAAQS. Thus, in this unique case where we are reevaluating the NO_2 increment, we have also evaluated information contained in a number of more recent studies, published since completion of the last NAAQS review, to determine whether there have been significant advances in scientific and technical information. However, our review of the post-1996 scientific and technical information does not represent the level of effort appropriate for the development of a criteria document. Nevertheless, we believe our review was sufficient to determine that there has not been a substantial advance in scientific understanding of the ambient pollutant concentration levels at which adverse effects may occur as a result of NO_X emissions. Thus, we believe the research summarized in the most recent criteria document and Staff Paper remains valid and relevant for purposes of this review. Although the more recent data augment our understanding of the effects that may be caused by emissions of NO_X, they do not provide significant new information on the specific ambient air pollutant concentrations that may ultimately cause or contribute to these effects. Thus, the data concerning pollutant impacts associated with NO_X do not provide sufficient information from which it would be possible to conclude that the levels of the existing NO_2 increments are inadequate for purposes of the nationwide PSD program.

C. Analysis of Effects

This section contains a summary of the health and welfare effects reviewed by EPA as part of the reconsideration of the pollutant-specific PSD regulations for NO_X. These effects are within the scope of effects reviewed by EPA as part of its decision in 1996 to retain the existing primary and secondary NO_2 NAAQS. The objective of this technical review is to determine whether there is any compelling basis for proposing to modify the original NO_2 increments, which were based on the ''percentage-of-NAAQS'' approach, in order to ensure that we promulgate pollutant-specific PSD regulations for NO_X that adequately protect air quality values, parks and special areas, and health and welfare from adverse effects which may occur in some areas notwithstanding compliance with the NAAQS.

1. Health Effects

In 1996, EPA announced its conclusions that the current primary ambient air quality standard for NO_2, which is in the form of an annual standard for NO_2, ''appears to be both adequate and necessary to protect

[15] NO_2 may be transformed to nitrate particulates by means of chemical reactions in the atmosphere. Nitrate is a major constituent of atmospheric PM. Due to limited scientific literature addressing the health impacts of nitrates, exposure currently is analyzed as exposure to fine PM. (NAPAP, 1998.)

human health against both long- and short-term NO_2 exposures.'' 61 FR 52852. In reaching this conclusion, EPA considered a variety of acute (short-term) and chronic (long-term) health effects associated with exposure to NO_2 concentration.[16] Some of the most serious health effects reviewed by EPA were shown to occur at significantly higher exposure concentrations than are allowed by the NAAQS; other health effects, however, were found to occur at levels near the NAAQS. For our review purposes herein, only the adverse health effects that were found to occur at levels at or near the NAAQS are being considered.[17]

The health effects of most concern at ambient or near-ambient concentrations of NO_2 with short-term (*e.g.*, less than 3 hours) exposure include mild changes in airway responsiveness (airway constriction and narrowing) and decrease in pulmonary function. In addition, there is some evidence of increased respiratory illnesses among children associated with long-term, low-level exposure to NO_2. Each of these effects is summarized below.

While there is little evidence to show that healthy individuals experience increases in airway responsiveness when exposed to NO_2 concentrations below 1.0 ppm, clinical studies of asthmatics have reported evidence of increased airway narrowing at relatively low concentrations (mostly within the range of 0.2 to 0.3 ppm NO_2) at short-term exposures of less than 3 hours. However, such responses did not appear to cause airway inflammation and were fully reversible. In addition, the exposure concentrations studied exceeded the ambient levels typically monitored in areas that meet the annual NAAQS.

Small changes in pulmonary function have been observed in asthmatics at NO_2 concentrations generally ranging between 0.2 and 0.5 ppm NO_2 either at rest or following periods of exercise. Some findings of airway resistance occurred in mild asthmatics exposed to concentrations as low as 0.1 ppm NO_2 at rest. However, EPA concluded that this finding was not considered statistically significant. As above, the concentrations related to these effects exceed the levels typically monitored in areas meeting the NAAQS.

Increases in respiratory illnesses in children 5 to 12 years old resulting from exposure typically averaging over a 2-week period were reported in a number of epidemiological studies investigating effects of indoor exposure to NO_2 emitted from gas stoves. In these studies, NO_2 concentrations were estimated in terms of two-week average NO_2 exposures, where mean weekly exposure concentrations in bedrooms were predominantly between 0.008 and 0.065 ppm NO_2. The EPA noted various limitations with these studies, however, that made it extremely difficult to extrapolate the results in a manner that would yield quantitative estimates of health impacts for outdoor exposure to NO_2.

2. Welfare Effects

In its 1996 review of the NAAQS, EPA concluded that the ''available scientific and technical evidence * * * does not provide an adequate basis for setting a separate secondary standard for NO_2'' to address the welfare effects considered by EPA. 61 FR 52855. In addition, because of the multiple causes and regional character of many of the welfare effects that may be associated with NO_X emissions, the Administrator concluded that ''adoption of a nationally uniform secondary standard would not be an effective approach to addressing them.'' *Id.* Thus, EPA adopted a secondary standard for NO_2 that is the same as the primary standard.

However, as discussed earlier, the goals and purposes of the PSD program include protection of welfare, air quality values and areas of special national and regional interest (national parks, national wilderness areas, etc.). Nitrogen dioxide and other nitrogen compounds have been associated with a wide range of environmental effects. Thus, EPA has reviewed the information on welfare effects to determine whether there is any basis for modifying the existing NO_2 increments or to establish an alternative regulatory framework in order to provide additional protection notwithstanding attainment of the NAAQS in PSD areas.

a. Direct Welfare Effects

The periodic review of the NO_2 NAAQS, leading to EPA's final decision published in 1996, expanded the scope of coverage over the previous periodic review in that it included new environmental considerations, set forth by the Clean Air Act Amendments of 1990 (1990 Amendments), not included in the earlier review. In addition to the environmental features identified for protection by the secondary standard in the definition of public welfare (*see* section 302(h) of the Act), the 1990 Amendments expressed a new determination on the part of Congress to investigate through research ''short-term and long-term causes, effects, and trends of ecosystems damage from air pollutants * * *'' (*see* section 301(e) of the Act). Thus, in addition to the traditional issues of visibility impairment, and vegetation and materials damage, EPA's most recent periodic review of the NO_2 NAAQS addressed as part of the secondary standard review short- and long-term effects of nitrogen deposition on biological, physical and chemical components of ecosystems and the resulting effect of changes in these components on ecosystems structure and function.

Information contained in the 1993 Criteria Document, not available in the previous criteria document, indicated that single exposures to NO_2 for less than 24 hours can produce effects on growth, development, and reproduction of plants. However, the data did not suggest significant effects at or below the current ambient standards level. Instead, the observed effects generally occurred at concentrations greatly exceeding the ambient levels of NO_2 measured in the U.S. Some studies have shown that NO_2 in combination with other pollutants (*i.e.*, SO_2, ozone) can increase plant sensitivity, thus lowering concentration and time of exposure required to produce injury/growth effects. Again, however, the pollutant concentrations used in these experimental studies were well above those observed in the ambient air and at a frequency of occurrence not typically found in the U.S.

Nitrogen dioxide has been qualitatively associated with various adverse effects on materials. For example, exposure to NO_2 may contribute to: Enhancing the fading of dyes; diminishing the strength of fabrics, plastics and rubber products; assisting the corrosion of metals; and reducing the useful life of electric components, paints, and masonry. Compared to studies on sulfur oxides, however, there is limited information available quantifying the effects of NO_2 or other nitrogen compounds. The available evidence shows that it is difficult to distinguish a single causative agent for observed damage because many agents, together with a number of environmental stresses, act on the surface of materials over time.

Another potential direct effect of NO_2 is visibility impairment. NO_2 and other

[16] Based on the 1993 Criteria Document used for the decision in 1996 to retain the existing NO_2 NAAQS, EPA reaffirmed its previous conclusion that NO_2 is the only oxide of nitrogen sufficiently widespread and commonly found in ambient air at high enough concentrations to be a matter of public health concern. 60 FR 52878, October 11, 1995.

[17] For the purposes of this review, we are only summarizing some of the adverse health effects that were identified during EPA's periodic review of the NO_2 NAAQS in 1996. A detailed discussion of pertinent studies can be found in the 1993 Criteria Document and the 1995 Staff Paper.

pollutants can degrade the visual appearance of distant objects and reduce the range at which they can be distinguished from the background. NO_2 appears as a yellow to reddish-brown gas because it absorbs blue light, allowing red wavelengths to reach the eye.

The discoloration effect is most noticeable as local scale or ''reasonably attributed impairment,'' defined as a coherent, identifiable impairment, which can be seen as an optical entity (plume) against the background sky or a distant object. NO_2 does not normally contribute significantly to haze in remote areas, because of its high reactivity and relatively short lifetime in the atmosphere. Large-scale ''regional haze'' is more commonly associated with the light-scattering properties of PM, including nitrate PM formed by chemical reactions involving NO and NO_2 with other substances in the atmosphere, and is discussed below as an indirect effect of NO_2.

As reported in the 1995 Staff Paper (p. 87), the 1993 Criteria Document indicated that less than 0.1 ppm-km NO_2 is sufficient to produce a color shift that is distinguishable in carefully controlled, color matching tests. However, at concentrations below 0.01 ppm (approximately the concentration increase allowed by the Class II increment for NO_2), area-wide impacts of NO_2 absorption are not considered important.[18] In addition, some studies have shown that brownish discoloration can result from particles alone, thus making it difficult to determine a reliable relationship between ground-level concentrations of NO_2 at any given point and discoloration caused by particles which may also be in a source's plume. The 1995 Staff Paper noted that despite the known light-absorbing qualities of NO_2, ''there are relatively little data available for judging the actual importance of NO_2 to visual air quality.''

b. Indirect Welfare Effects

Various other welfare effects associated with NO_2 of environmental concern are indirect effects that NO_2 may have on ecosystems. These indirect effects occur following the transformation of ambient NO_2 to other nitrogen compounds by chemical reactions in the atmosphere and the transfer of these compounds from the atmosphere to other media through a process known as atmospheric nitrogen deposition (nitrogen deposition). Nitrogen deposition is the process by which nitrogen in airborne compounds is transferred to a variety of surfaces, *e.g.*, water, soil, vegetation, and other materials.

In terrestrial or agricultural systems, for example, that are nitrogen limited, some amount of nitrogen deposition can enhance growth of some forest species and crops. However, in areas where deposition occurs in excess of plant and microbial demand (also known as nitrogen saturation) the added nitrogen can disturb the nitrogen cycle, contributing to such adverse effects as increased plant susceptibility to some natural stresses and modification of interplant competition.

To have an effect on a particular ecosystem, nitrogen that has been released to the atmosphere must enter the ecosystem by either wet (rain or snow), dry (transfer of gases or particles), or occult (fog, mist or cloud) deposition. Nitrogen deposition occurs primarily as nitrates, which are formed in the atmosphere by the oxidation of NO and NO_2, or as ammonia, which is released by agricultural or soil microbial activity. When the nitrogen transfer process involves acids (*e.g.*, nitric acid) or acidifying compounds, the deposition process is referred to as ''acidic deposition.'' The adverse welfare effects associated with both types of nitrogen deposition are discussed in greater detail in the subsections below.

In the 1995 Staff Paper assessing the scientific and technical information contained in the 1993 Criteria Document, it was reported that little, if any, research had been initiated to determine what percentage of total (wet and dry) nitrogen deposition can be attributed to emissions of stationary and mobile sources of NO_X. The EPA did, however, estimate at that time that approximately one-third to one-half of the emissions of NO_X in the U.S. are removed by wet deposition, and it was generally assumed that dry deposition was equal to wet deposition for areas directly adjacent to emissions sources. The same assumption for wet deposition could not be made in receptor locations remote from the emissions sources.

More recently, at least one study has been published reporting on the relationship between emissions of NO_X and nitrate concentrations (and deposition) in the eastern U.S. The results of this study suggest linearity, specifically, that a reduction in NO_X emissions may reduce NO_3^- concentrations and acidic precipitation (wet deposition) with an efficiency ranging between 75 and 95 percent (Butler, 2003). The study was limited to the eastern U.S., and left unanswered the percentage contribution of total NO_X emissions to the total nitrogen deposition.

Studies such as this can provide potentially useful information to help estimate the relative benefits (in terms of anticipated reductions in NO_3^- deposition) resulting from different NO_X emissions control strategies. Similarly, such information could prove useful in evaluating the relationship between different levels of allowable ambient NO_2 concentration increases (*i.e.*, PSD increment levels) and corresponding total nitrogen deposition rates. Unfortunately, there are additional criteria that would need to be studied in order to be able to adequately evaluate this relationship and associated environmental effects.

To further complicate matters, dry deposition differs from wet deposition in that a sample taken at a particular location cannot be assumed to represent the rate of dry deposition of the area as a whole. Instead, dry deposition is driven by surface properties that are site-specific. Thus, a regionally representative average rate of dry deposition cannot be readily derived from information obtained from a single location (NOAA, 2004).

The following subsections summarize the various indirect effects of NO_2 on ecosystems, including terrestrial systems (*i.e.*, plant communities), wetlands, and aquatic systems. The EPA believes that the effects described are potentially relevant to an evaluation of the pollutant-specific PSD regulations for NO_X because these effects have been observed in areas of the country that are attaining the NAAQS.

(1) *Terrestrial ecosystems.* Soils are the largest pool of nitrogen in forest ecosystems, although such nitrogen is generally not available for plants until it has been mineralized by bacteria (Fenn, 1998). Another important source of nitrogen is atmospheric wet and dry deposition, which often has a fertilizing effect on terrestrial ecosystems, accelerating plant growth. While this effect can sometimes be considered beneficial, nitrogen deposition may also cause or contribute to significant adverse changes in terrestrial ecosystems, including soil acidification, increase in soil susceptibility to natural stresses, and alterations in plant species mix.

When excess nitrogen input causes soil acidification, it can alter the availability of plant nutrients (*i.e.*, calcium and magnesium) and expose tree roots to toxic levels of aluminum and manganese, thereby having an adverse effect on tree growth. It can also lead to the mobilization of aluminum from the soil as nitrates are leached

[18] ''Protecting Visibility: An EPA Report to Congress,'' OAQPS, October, 1979.

from the soil and transported to waterways, where the aluminum can exhibit toxic effects to aquatic organisms.[19]

Air pollution is not the sole cause of soil change; many studies have shown that acidic deposition is not a necessary condition for the presence of extremely acidic soils. High rates of acidification are occurring in less polluted regions of western U.S. because of internal soil processes, such as tree uptake of nitrate and nitrification associated with excessive nitrogen fixation. Although nitrogen deposition can accelerate the acidification of soils, the levels of nitrogen necessary to produce measurable soil acidification are quite high. The 1993 Criteria Document indicated that, at that time, nitrogen deposition had not been directly associated with the acidification of soils in the U.S. More recent information suggests that in parts of the Northeast, for example, acid deposition has resulted in the accumulation of sulfur and nitrogen in the soil beyond the levels that forests can use and retain, and has accelerated the leaching of base cations, such as calcium and magnesium, that help neutralize acid deposition. (Driscoll, 2001.) Some western forest areas may also be experiencing nitrogen saturation conditions, although the role of nitrogen deposition may vary from one location to another (Fenn, 1998, 2003).

Aside from the effects of soil acidification, some studies have shown that increased nitrogen deposition can alter tree susceptibility to frost damage, insect and disease attack, and plant community structure. However, other studies have not shown that similar results occur. In all, the studies evaluated in the 1993 Criteria Document which focused on the impact of excessive inputs of nitrogen in forest ecosystems showed mixed results. The long response time of trees to environmental stresses has made it difficult to fully understand how acid rain may affect trees. It is also difficult to isolate the possible effects of acid rain from other stresses resulting from other natural and anthropogenic origins. However, more recent studies appear to provide some evidence that acid deposition has caused the death of red spruce trees, particularly at higher elevations in the Northeast by decreasing cold tolerance, and may be in part responsible for the extensive loss of sugar maple in Pennsylvania. (Driscoll, 2001.)

Finally, in terrestrial systems in which the pre-existing balance is marked by a competition among species for the available nitrogen, additional nitrogen inputs, such as nitrogen deposition, may bring about an alteration of the species mix. That is, a displacement of one kind of vegetation (*e.g.*, plants, grasses) with another may occur. While the 1995 Staff Paper noted that there were no documented accounts of terrestrial ecosystems undergoing species shifts due to nitrogen deposition in the U.S., recent research provides some evidence suggesting that elevated nitrogen deposition can contribute to shifts of species compositions (*e.g.*, Allen, 1998; Bowman, 2000).

(2) *Wetlands.* Wetlands (*e.g.*, swamps, marshes, bogs) are lands where saturation with water is the dominant factor determining the nature of soil development and the types of plants and animal communities living in the soil and on its surface. These areas function as habitats for plant and wildlife (among other useful environmental purposes), including many rare and threatened plant species. Some of these plants adapt to systems low in nitrogen or with low nutrient levels. Long-term studies (greater than 3 years) of increased nitrogen loadings to wetland systems in European countries have reported that increased primary production of biomass can result in changes of interplant competition. The 1995 Staff Paper reported that, based on the evidence reviewed in the 1993 Criteria Document, ''the staff believes we can anticipate similar effects from atmospheric nitrogen deposition in the United States * * *.'' However, EPA found no documentation providing sufficient evidence that such species changes have occurred or were occurring at the time in the U.S.

(3) *Aquatic ecosystems.* Nitrogen deposition may adversely affect aquatic ecosystems as a result of either acidification or eutrophication. Both processes can cause a reduction in water quality that makes the body of water unsuitable for many aquatic organisms. The basic concern is that deposition of nitrates alters the availability of nitrogen to organisms (*e.g.*, algae, fish, submerged vegetation, and amphibian and aquatic vertebrate communities) and causes changes in species composition within the system. In addition, the affected water can become unfit for human consumption.

The 1995 Staff Paper indicated that growing evidence supported the concern that the impact of nitrogen deposition on sensitive aquatic systems ''may be significant.'' Atmospheric nitrogen can enter lakes and streams either as direct deposition to the water surfaces or as nitrogen deposition to the watershed of which they are a part. In some cases, nitrate may be temporarily stored in snow packs from which it is subsequently released in more concentrated form in snow melt. In other cases, nitrogen deposited to the watershed may subsequently be routed through plants and soil microorganisms and transformed into other inorganic or organic nitrogen species which, when they reach the water system, are only indirectly related to the original deposition. In addition to the contribution of nitrogen from anthropogenic sources, recent studies suggest that nitrogen released from the weathering of nitrogen-bearing bedrock, not commonly considered in the biogeochemical cycling of nitrogen, may contribute a ''surprisingly large amount'' of nitrate to natural waters. (Dahlgreen, 2002.)

Acidification may occur in two ways: Chronic (long-term) acidification and episodic (short-term or seasonal) acidification. Episodic acidification is more likely to be the primary problem in most situations, with chronic acidification occurring mainly where excessive nitrogen saturation exists. (NAPAP, 1998.) The main concern with acidification of aquatic ecosystems is associated with freshwater systems. Acidification impairs the water quality of lakes and streams by lowering the pH levels, decreasing acid-neutralizing capacity, and increasing aluminum concentrations. (Driscoll, 2001.) High levels of aluminum, as well as increased acidity, create unfit conditions for habitat and cause the water to be unfit for human consumption. Acid deposition may also increase the conversion of mercury to organic (methyl) mercury in lakes where it is absorbed by aquatic organisms and leads to increasing concentrations in the food chain. Human consumption of fish containing high levels of methylmercury can lead to problems with the central nervous system.

Regions of North America differ in their sensitivity to acidic deposition and in the amount of acidic deposition they receive. Some parts of the eastern U.S. are highly sensitive and chronically or episodically receive damaging concentrations of acidic deposition. For example, a recent report indicates that 41 percent of lakes in the Adirondack Mountain region of New York and 15

[19] Aluminum from soil seldom appears in aquatic systems because natural aluminum minerals are insoluble in the normal pH range of natural waters. However, the term ''aluminum mobilization'' refers to the the conversion of aluminum in acidic soils into dissolved forms and its transport, as runoff or subsurface flow, to water systems. Mobilized aluminum can then alter the acid/base property of natural water systems (Wang, 2004).

percent of lakes in New England show evidence of either chronic or episodic acidification, or both. (Driscoll, 2001.) Other sensitive regions, such as the western U.S., are unlikely to suffer adverse chronic effects but may experience acidic conditions more on an episodic basis. Certain high-elevation western lakes, in particular, are subject to episodes of acidic deposition.

Eutrophication generally is a natural process by which aquatic systems are enriched with the nutrients, including nitrogen, that are presently limiting for primary production in that system. However, this process can be accelerated by increased nutrient input resulting from anthropogenic sources, *e.g.*, agricultural runoff, urban runoff, leaking septic systems, sewage discharge. Studies have also shown that nitrogen deposition may directly and indirectly play a role in accelerated eutrophication. When nitrogen is a limiting nutrient, input from various origins can make a water system prone to eutrophication, with impacts ranging from the increased turbidity and floating mats of macro algae shading out beneficial submersed aquatic vegetation habitat, to the exacerbation of noxious algae blooms, to the creation of low or no-oxygen conditions which negatively affect fish populations. The National Park Service (NPS) has reported that loadings of total nitrogen deposition (wet and dry) have caused changes in aquatic chemistry and biota in the Rocky Mountain National Park's high elevation ecosystems. (U.S. Department of the Interior, 2002.) In the same report, the NPS noted that increasing trends in nitrogen deposition at many parks in the western U.S. result from both nitrate and ammonium.

The key to creating a linkage between levels of nitrogen deposition and the eutrophication of aquatic systems is to demonstrate that the productivity of the system is limited by nitrogen availability, and to show that nitrogen deposition is a major source of nitrogen to the system. Thus, while it appears that nitrogen inputs to aquatic systems may be of general concern for eutrophic conditions, the significance of nitrogen input will vary from site to site. (1995 Staff Paper at 77.)

A 1993 National Research Council report identifying eutrophication as the most serious pollution problem facing the estuarine waters of the U.S. was reported in an EPA document issued in 1997, entitled ''Nitrogen Oxides: Impacts on Public Health and the Environment'' (p. 79). Nitrogen input is a major concern because nitrogen is the limiting nutrient for algae growth in many estuaries and coastal water systems. In contrast to the eutrophication concern, acidification typically is not a concern, because estuaries and coastal waters receive substantial amount of weathered material from terrestrial ecosystems and from exchange with sea water.

Estimation of the contribution of atmospheric nitrogen deposition to the eutrophication problem can be difficult because of the various direct anthropogenic sources of nitrogen, including agricultural runoff and sewage. Some studies have shown that nitrogen deposited from the atmosphere can be a significant portion of the total nitrogen loadings in specific locations, such as the Chesapeake Bay—the largest of the 130 estuaries in the U.S. It has been estimated that the proportion of the total nitrate load to the Bay attributable to nitrogen deposition ranges from 10 to 45 percent (NAPAP, 1998).

In most freshwater systems, including lakes and streams, phosphorus, not nitrogen, is the limiting nutrient. Thus, eutrophication by nitrogen inputs will only be a concern in lakes that are chronically nitrogen limited and have a substantial total phosphorus concentration. This condition is common only in lakes that have received excessive inputs of anthropogenic phosphorous, or in rare cases, have high concentrations of natural phosphorus. In the former case, the primary dysfunction of the lakes is an excess supply of phosphorus, and controlling nitrogen deposition would be an ineffective method of gaining water quality improvement. In the latter case, nitrogen deposition can measurably increase biomass and thus contribute to eutrophication in lakes with high concentrations of natural phosphorus. Other lakes, including some high-elevation lakes in the Rocky Mountains and Sierra Nevada, are very low in both phosphorus and nitrogen; addition of nitrogen can increase biomass and contribute to eutrophication in these lakes also.

(4) *Visibility impairment (Regional Haze).* Nitrate particulates, formed as a result of chemical reactions involving NO and NO_2 with other substances in the atmosphere, are considered to be more responsible for visibility impairment than NO_2 directly. Nitrate particles are observed as both fine and coarse particles. The fine particles that can remain airborne for considerable periods of time and may be transported long distances from the NO_X source. These fine particles impair visibility by scattering or absorbing light.

Generally, the two largest contributors to visibility impairment are sulfates and carbon-based particles. The major cause of visibility impairment in the East is sulfate. Nitrates account for only 7 to 16 percent of the light extinction in the East, but are responsible for between 4 and 45 percent of the light extinction in the West. While NO_2, a precursor of nitrate particulates, is minimized through the control of NO_X emissions from new and modified major stationary sources under the PSD requirements for NO_X, EPA believes that the problems associated with nitrate particulates, along with other forms of PM, are best addressed through programs focusing on strategies to effectively reduce PM. For example, EPA's Regional Haze program, established pursuant to section 169B of the Act, specifically requires reductions in NO_X emissions from certain existing stationary sources. The EPA also recognized the significance of NO_X emissions as an important precursor of $PM_{2.5}$ under its June 2004 proposal for CAIR. Accordingly, EPA proposed to assign emission reduction requirements to States that significantly contribute to nonattainment in a downwind State with respect to the $PM_{2.5}$ NAAQS. Both the Regional Haze program and the proposed CAIR are discussed in greater detail later in this preamble.

VI. Proposed Actions

As noted above, section 166 directs EPA to conduct a study and promulgate regulations to prevent significant deterioration of air quality due to NO_X emissions. Those regulations may include increments or ''other measures'' to prevent significant deterioration of air quality, so long as those other measures are consistent with the requirements of sections 166(c) and 166(d) of the Act. Accordingly, we are today proposing three options for addressing the statutory requirement for preventing significant deterioration of air quality due to emissions of NO_X which we believe satisfy the specific criteria described herein. The first option involves retaining the existing NO_2 increments, and the other two options qualify as ''other measures'' and include using (1) a cap and trade program in lieu of increments, and (2) a State planning option providing States with some flexibility for developing ''other measures'' to adequately prevent significant deterioration of air quality due to emissions of NO_X.

A. Retain Existing Increment System for NO_X

1. How Existing Characteristics of the Regulatory Scheme Fulfill Statutory Criteria

As discussed above, EPA does not interpret the Court's decision to require that EPA reevaluate the entire regulatory framework of the PSD regulations for NO_X established in 1988. Thus, for the increment system for NO_X set forth in this proposal, EPA is only reevaluating the level, time period, and pollutant form (NO_2) used in establishing increments in its PSD regulations for NO_X.

Because section 166 of the Act requires that EPA establish PSD regulations for NO_X that satisfy the criteria set forth in subsections (c) and (d), EPA interprets section 166 to require that its PSD regulations for a particular pollutant must, as a whole, satisfy the criteria in section 166. However, in this unusual circumstance where EPA is reevaluating specific aspects of a larger body of PSD regulations under an order of a court, EPA does not necessarily consider all of the criteria in section 166(c) of the Act to be relevant to the specific issues addressed by the court regarding the characteristics of an increment. The EPA believes that many of the factors applicable under section 166(c) are fulfilled by elements of the increment and area classification regulatory framework that were not controverted in *EDF* v. *EPA*. Thus, EPA has not conducted an extensive review of the existing increments based on those factors that are sufficiently satisfied by the overall increment and area classification system that was not controverted.

However, we believe it is helpful to explain how several aspects of the overall system of regulations EPA adopted for NO_X under section 166 satisfy the factors applicable under section 166(c). We believe our obligations under section 166(c) of the Act are satisfied when the entire body of pollutant-specific PSD regulations for NO_X (including the level and other characteristics of any increment) as a whole meet the factors applicable under 166(c) of the Act.

a. Increment System

An increment is the maximum allowable increase in air pollution that is allowed to occur above baseline concentrations. The baseline concentration in a particular area is the ambient pollutant concentration in an area at the time the first complete PSD permit application is submitted (*i.e.*, the baseline date) by a new major stationary source or a major modification for a source affecting that area. By establishing the maximum allowable level of increase in air pollution in a particular area, an increment defines ''significant deterioration.'' Once a proposed new major stationary source or major modification establishes the baseline date in a particular area, the new emissions from that source consume increment in that area, as do any subsequent emissions increases that occur from any source in the area. When the increment is totally consumed, additional PSD permits cannot be issued until sufficient amounts of the increment are ''freed up'' via emissions reductions that may be required by the permitting authority. Moreover, the air quality in a region cannot deteriorate to a level in excess of the applicable NAAQS, even if all the increment has not been consumed. Thus, areas experiencing air quality levels near the level allowed by the NAAQS may not be able to use the full amount of pollutant concentration increase allowed by the increment.

Congress did not require EPA to utilize increments in its PSD regulations for NO_X promulgated under section 166 but gave EPA the discretion to employ increments if appropriate to meet the criteria and goals and purposes set forth in sections 166 and 160. 42 U.S.C. 7474(d); *EDF* v. *EPA*, 898 F.2d at 185 (''Congress contemplated that EPA might use increments''). In adopting its PSD regulations for NO_X in 1988, EPA elected to base those regulations on the concept of an increment because increments represented the most workable option at the time for establishing a numerical measure against which permit applications could be evaluated. In addition, EPA recognized that in using the increment approach, it would be able to take advantage of expertise that State and local agencies had already developed in implementing an increment-based program for PM and SO_2. 53 FR 40657.

Thus, EPA concluded that an increment-based program was the best way to fulfill its obligation under section 166(c) to provide ''specific numerical measures against which permit applications may be evaluated.'' Under section 165(a)(3) of the Act, a permit applicant must demonstrate that emissions from the proposed construction and operation of a facility ''will not cause, or contribute to, air pollution in excess of any (A) maximum allowable increase or maximum allowable concentration for any pollutant.'' 42 U.S.C. 7475(a)(3). An increment is a quantitative value that establishes the ''maximum allowable increase'' for a particular pollutant. It functions, therefore, as a specific numerical measure that can be used to evaluate whether an applicant's proposed project will cause or contribute to air pollution in excess of allowable levels. Since this aspect of EPA's regulations was not controverted in *EDF* v. *EPA*, we are not proposing to revisit this criterion in our analysis of the characteristics of the increments below.

In addition, EPA also determined that using increments in the PSD regulations for NO_X also satisfied the second factor in section 166(c) by providing ''a framework for stimulating improved control technology.'' In 1988, we concluded that increments establish an incentive to apply more stringent control technologies in order to avoid violating the increment. 53 FR 40657. Given that the PSD increment level is consumed over time, the level of control required to avoid causing exceedance of the increment becomes more stringent. Consequently, new or modified sources in such localities may have to install control technologies more effective than those normally considered representative of BACT in order to comply with the increment, or to preserve some portion of the increment for future economic growth. The control technologies utilized in these areas will become the basis of BACT determinations elsewhere, as the technologies become more commonplace and the costs tend to fall. *See also* S. Rep. 95–127 at 18, 30 (3 LH at 1392, 1404) (''the incremental ceiling should serve as an incentive to technology, as a potential source may wish to push the frontiers of technology in a particular case to obtain greater productive capacity within the limits of the increments''). We believe the existing regulatory framework, which was not controverted in *EPA* v. *EDF*, satisfies this criterion and do not propose to reconsider it under the increment option of this proposal.

b. Area Classifications

In 1988, EPA chose to establish NO_2 increments of different stringency based on the three-tiered classification scheme established by Congress. 53 FR 40657. Under this scheme, Class I areas are generally national parks, wilderness areas, and other special areas that require an extra level of protection. The most stringent increment is imposed in Class I areas. Class III areas, which have the least stringent increment level, are those areas in where a State wishes to permit a higher level of industrial development. Areas that are not

especially sensitive or that do not wish to allow for a higher level of industrial growth are classified as Class II. When Congress established this three-tiered scheme for SO_2 and PM, it intended that Class II areas be subject to an increment that allows ''moderately large increases over existing pollution.'' H.R. Rep. 95–294, 4 Legislative History at 2609. The Petitioner's in *EDF* v. *EPA* did not contest EPA's decision to employ this same classification scheme for NO_X. We believe that adopting such an area classification scheme for NO_X with a different level of increment for each type of area helps to fulfill two of the factors applicable under section 166(c) of the Act.

First, Class I areas generally cover the kinds of parks and special areas covered by section 160(2) of the Act. Thus, establishing the lowest level of increment in these areas helps fulfill EPA's obligation to establish regulations for NO_X that ''preserve, protect, and enhance the air quality'' in these areas.

With the air quality in Class I areas subject to the greatest protection, this scheme then provides two additional area classifications with higher increment levels to help satisfy the goal in section 160(3) of the Act that EPA ''insure that economic growth will occur in a manner consistent with preservation of clean air resources.'' In those areas where clean air resources may not require as much protection, more growth is allowed. By employing an intermediate level (Class II areas) and higher level (Class III areas), this classification scheme helps ensure that growth can occur where it is needed (Class III areas) without putting as much pressure on existing clean air resources in other areas where some growth is still desired (Class II areas).

By redesignating an existing Class II area to Class III, States may accommodate economic growth and air quality in areas where the Class II increment is too stringent to allow the siting of new or modified sources. The procedures specified by the Act for such a redesignation require a commitment of the State government to the creation of such an area, extensive public review, participation in the State Implementations Plan (SIP) area redesignation process, and a finding that the redesignation will not result in the applicable increment being exceeded in a nearby Class I or Class II area. *See* 42 U.S.C. 7474(a)–(b) (Section 164(a)–(b)). Our 1988 analysis, 53 FR at 3702–05 and the subsequent issuance of PSD permits for major new and modified sources of NO_X since that time,[20] tend to confirm that, with the existing increment levels, the three-tiered classification system has allowed for economic growth, consistent with the preservation of clean air resources.

Because it helps fulfill these goals and purposes and was not controverted in *EDF* v. *EPA*, we do not propose to revisit our decision to employ this area classification scheme for NO_X. However, we do not believe that this framework alone completely satisfies the factors applicable under section 166(c) of the Act. The increment level that is employed for each class of area is also relevant to an evaluation of whether the area classification scheme achieves the competing goals of the PSD program. Thus, we propose to further consider the goals of protecting parks and special areas and ensuring economic growth consistent with the preservation of clean air resources as we reevaluate the increment levels at the direction of the Court.

c. Permitting Procedures

The framework of our existing PSD regulations employs the preconstruction permitting system and procedures required under section 165 of the Act. 42 U.S.C. 7475. These requirements are generally reflected in sections 51.166 and 52.21 of EPA's PSD regulations in Title 40 of the Code of Federal Regulations. These permitting and review procedures, which we interpret to apply to construction on any new or modified major source, fulfill several of the factors applicable under section 166(c) of the Act for EPA's PSD regulations for NO_X. Two of the goals and purposes of the PSD program, in particular, seem especially amenable to being fulfilled through a case-by-base permit review.

Under section 160(5) of the Act, as incorporated in section 166(c), EPA should develop PSD regulations for NO_X that ''assure that any decision to permit increased air pollution in any area to which this part applies is made only after careful evaluation of all the consequences of such a decision, and after adequate procedural opportunities for informed public participation in the decisionmaking process.'' The permit evaluation and review procedures reflected in the existing PSD regulations, which are applicable to sources of NO_X, call for a careful evaluation that involves a source impact analysis (sections 51.166(k) and 52.21(k)), air quality analysis (sections 51.166(m) and 52.21(m)), additional impacts analysis (sections 51.166(o) and 52.21(o)), and an analysis of impacts on Class I areas (sections 51.166(p) and 52.21(p)). In addition, the procedures incorporated in sections 51.166(q) and 52.21(q) ensure public participation in the decisionmaking process. Thus, we believe the existing framework for the PSD regulations for NO_X fulfills the goals and purposes set forth in section 160(5) by employing the permit review procedures described above. Because the goal in section 160(5) is satisfied by the existing regulatory framework that was not controverted in *EDF* v. *EPA*, we do not propose to further consider this factor in our evaluation of the characteristics of the NO_2 increment.

In addition, we believe the permit review component of the framework also fulfills the goals and purposes set forth in section 160(4) of the Act. As incorporated through section 166(c) of the Act, section 160(4) calls on EPA to establish PSD regulations that prevent one State from interfering with the PSD program for any other State. This goal is also one that we believe can be best implemented through individual permit review when we use an increment system. In the course of such a review, a source must demonstrate that it does not cause or contribute to an increment violation in any area subject to part C of the Act. *See* section 165(a)(3)(A). These areas include areas in other States. Thus, we do not propose to further consider the goal in section 160(4) in our reevaluation of the characteristics of the NO_2 increments. We believe the existing permit evaluation procedures incorporated into the framework of our existing PSD regulations for NO_X operate to satisfy the goal in section 160(4) and do not require further analysis for the increment option.

d. Additional Impacts Analysis

One particular aspect of the permit review procedures described above is worthy of more particular attention because it also helps fulfill the substantive criteria and goals and purposes in section 166(c) and section 160. Where applicable, the additional impact analysis required under section 165(e)(3)(B) and the PSD regulations (§§ 51.166(o), 52.21(o)) provides a case-by-case review of the potential harm that a pollutant may cause to certain resources in all classes of areas. The following type of analysis is required to be conducted by the permit applicant:

(1) The owner or operator shall provide an analysis of the impairment to visibility, soils and vegetation that would occur as a result

[20] EPA does not formally track the issuance of PSD permits across the country, but EPA's Regional Offices have confirmed that various PSD permits for sources of NO_X have been issued by many of the States in their respective jurisdictions.

of the source or modification, and general commercial, residential, industrial and other growth associated with the source or modification. The owner or operator need not provide an analysis of the impact on vegetation having no significant commercial or recreational value.

(2) The owner or operator shall provide an analysis of the air quality impact projected for the area as a result of general commercial, residential, industrial, and other growth associated with the source or modification.

Section 165(e)(3)(B). The Additional Impacts Analysis requirements are the most relevant in this rulemaking action to Class II and Class III areas which are not subject to the additional FLM review that applies in Class I areas.

e. Federal Land Manager Review

In the 1988 rulemaking addressing PSD for NO_X, EPA extended the FLM review procedures set forth in sections 51.166(p) and 52.21(p) to cover NO_2. 53 FR at 3704. These FLM review procedures were established based on section 165(d), and they were originally applied only in the context of the statutory increments for PM and SO_2. However, because they also address many of the factors applicable under section 166(c) of the Act, EPA also applied them to NO_X through regulation. Under an increment approach, we view the FLM review procedures as an additional measure that helps to satisfy the factors in sections 166(c) and 160(2) which require that EPA's PSD regulations for NO_X protect air quality values and parks and other special areas.

Section 165(d) creates a scheme under which the FLM has an affirmative responsibility to protect the AQRVs in Class I areas, and may object to or concur in the issuance of a PSD permit based on the impact or lack thereof on any affected AQRV that the FLM has identified, irrespective of whether the increment is exceeded. The exceedance of the increment determines only where the burden of proof lies.[21]

That is, if the proposed source will cause or contribute to a violation of a Class I increment, the permitting authority (State or EPA) shall not issue the permit unless the owner or operator demonstrates to the satisfaction of the FLM that there will be no adverse impact on AQRVs.[22] On the other hand, if the proposed source does not cause or contribute to a violation of a Class I increment, the FLM may only prevent issuance of the permit by demonstrating to the satisfaction of the permitting authority that the source will have an adverse impact on AQRVs. Section 165(d)(2)(C).

Incorporating these FLM procedures into the PSD regulations for NO_X helps to provide protection for parks and special areas (which are generally the Class I areas subject to this review) and air quality values (which are factors considered in the review). Section 166(d) on its face provides that measures other than increments may be promulgated to satisfy the duty under section 166.

Legislative history indicates that the FLM provisions of section 165(d) were intended to provide another layer of protection, beyond that provided by increments. The Senate committee report stated the following: ''A second test of protection is provided in specified Federal land areas (Class I areas), such as national parks and wilderness areas; these areas are also subjected to a review process based on the effect of pollution on the area's air quality related values.'' S. Rep. 95–127, at 17, 4 Legislative History at 1401.

f. Installation of Best Available Control Technology

Finally, another important element of the existing framework of PSD regulations applicable to NO_X emissions is the requirement that a permit applicant apply BACT when constructing a new source or making a major modification to an existing source. This requirement, based on section 165(a)(4) of the CAA, is included in EPA's PSD regulations and thus is also part of the regulatory framework for the Agency's pollutant-specific regulations for NO_X. 40 CFR 52.21(j); 40 CFR 51.166(j). Our existing regulations define ''best available control technology'' as ''an emission limitation * * * based on the maximum degree of reduction for each pollutant subject to regulation under the Act * * * which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source through application of production processes or available methods, systems, and techniques * * *.'' 40 CFR 52.21(b)(12); 40 CFR 52.166(b)(12). This pollutant control technology requirement is rigorous and in practice has required significant reductions in the pollutant emissions from new and modified sources. Thus, the BACT requirement is an additional measure in the framework of PSD regulations for NO_X that helps to satisfy the factors in sections 166(c), 160(1), and 160(2), which require that EPA's PSD regulations for NO_X protect air quality values, public health and welfare, and parks and other special areas.

2. Proposed Actions Regarding Characteristics of NO_2 Increments

We believe our review of the characteristics of the existing NO_2 increments should apply the following four factors applicable under section 166(c): (1) Protect air quality values; (2) protect public health and welfare from adverse effects from air pollution that occur even if in attainment; (3) protect air quality in parks and special areas; and (4) ensure economic growth consistent with preservation of clean air resources.[23] As noted earlier, we believe sections 166 and 160 direct that we balance the fourth factor (fostering economic growth) against the other three environmentally protective factors listed above. The other four factors identified in sections 166(c) and 160 of the Act do not appear to relate to the characteristics of the increments and are more appropriately considered when establishing the overall framework for PSD regulations. As described above, we believe that the framework adopted for the PSD regulations for NO_X satisfies the other factors. Since EPA is not reconsidering the entire framework in this proposed option, we do not believe that it is appropriate to further consider these other four factors.

a. Level of Increment

Consistent with the ''contingent safe harbor'' approach described above, our analysis of the appropriate levels for NO_2 increments begins by establishing a ''safe harbor'' increment level that is ''at least as effective as'' the increments established by Congress in section 163 of Act. 42 U.S.C. 7476(d). The court in *EDF* v. *EPA* recognized that this standard from section 166(d) of the Act is satisfied when we establish increments using the percentage-of-NAAQS approach that Congress used to establish the statutory increments. *See*

[21] In response to concerns that Class I increment would hinder growth in areas surrounding the Class I area, Class I increments were established as a means of determining where the burden of proof should lie for a demonstration of adverse effects on AQRVs. *See* Senate Debate, June 8, 1977 (3 LH at 725).

[22] Even if such a waiver of the Class I increment is allowed upon a finding of no adverse impact, the source must comply with such emissions limitations as may be necessary to ensure that the Class II increment for SO_2 or PM is not exceeded. Section 165(d)(2)(C)(iv). In 1988, EPA made this provision applicable to the PSD provisions for NO_X, with a cap of 25 $\mu g/m^3$ · the NO_2 Class II increment. 53 FR at 3704; 40 CFR 51.166(p)(4) and 52.21(p)(5).

[23] We paraphrase these factors here and in the sections that follow to facilitate the explanation of our reasoning. However, we recognize that the statutory language is broader than the shorthand we use here for convenience.

898 F.2d at 188. This approach involves using the same percentages that Congress used to calculate the PM and SO_2 increments from the NAAQS in effect at that time for these pollutants.

Because the only oxide of nitrogen for which we have a NAAQS is NO_2, we can only utilize the percentage of NAAQS approach to establish a ''safe harbor'' increment level for NO_2. We consider below whether we should establish increments for other forms of NO_X.

Because Congress used different percentages to calculate the Class I increments for PM and SO_2, we must determine which of these percentages is appropriate for the Class I NO_2 increment. For the reasons described in the 1988 rulemaking, we believe that it is appropriate for NO_2 increments to be derived using the same percentages that Congress used for SO_2 because NO_2 more closely resembles SO_2 than PM in its characteristics and sources. *See* 53 FR 3698, 3700 (February 8, 1988). Thus, we begin our analysis with a ''safe harbor'' increment level for each class of area that is set at the same percentage of the NO_2 NAAQS as the SO_2 increment is of the SO_2 NAAQS. Because the NO_2 increments have not changed since 1988, the percentage-of-NAAQS approach yields the same levels that we derived in 1988. Thus, using this approach, the ''safe harbor'' level for the Class I increment for NO_2 is 2.5 $\mu g/m^3$ (annual average), a level that is 2.5 percent of the NO_2 NAAQS. For the Class II increment for NO_2, the ''safe harbor'' level is 25 $\mu g/m^3$ · 25 percent of the NO_2 NAAQS. For the Class III increment for NO_2, the ''safe harbor'' level is 50 $\mu g/m^3$ · 50 percent of the NO_2 NAAQS.

Under our interpretation of the Act, these ''safe harbor'' levels establish the minimum stringency levels (or highest concentration levels) that we may use as the increments for NO_2. Our next step is to consider the factors applicable under section 166(c) and evaluate whether we need to revise the ''safe harbor'' level to satisfy these factors. Thus, under the increment option in this proposed rulemaking, to satisfy the requirements of section 166 of the Act, we believe we must evaluate whether it is necessary to adjust the NO_2 increments to levels more stringent than the ''safe harbor'' levels we derived using the percentage-of-NAAQS-approach. In this analysis of the level of each increment, we propose to apply the four factors applicable under section 166(c) that have not already been satisfied by the regulatory framework described above. Thus, we consider whether different increment levels are necessary to (1) protect air quality values; (2) protect public health and welfare from any effects occurring at levels below the NAAQS; (3) protect parks and special areas; and (4) ensure economic growth consistent with preservation of clean air resources.

(1) *An increment is an allowable marginal increase in air pollution.* Increments represent the maximum allowable level of increase in an area that is in attainment with the NAAQS or unclassifiable. Thus, increments are essentially a marginal level of increase in air pollution that is allowable for particular areas. The statutory increments are expressed as concentration rather than mass values. Thus, in applying the factors applicable under section 166(c), we believe section 166 of the Act requires that we analyze the impacts on air quality values, health and welfare, and parks and special areas that may occur as a result of some marginal increase in the concentration of air pollution in an area.

Using the ''contingent safe harbor'' approach, we first derive the highest level of marginal increase that may be permitted for each class of areas using the percentage-of-the-NAAQS approach. We must then consider whether this level of marginal increase satisfies the factors applicable under section 166(c). If the marginal increase in concentration allowed by the ''safe harbor'' level does not adequately protect against these effects and ensure economic growth consistent with preservation of clean air resources, then we must attempt to identify an alternative level of marginal increase that will satisfy the factors applicable under section 166(c).

As noted earlier, EPA does not interpret the PSD program to require it to set increments at a level where there will be no adverse effects from a marginal increase in air pollution in the amount of the increment. Congress did not anticipate that an increment would be a level of increase below which there would be no effects. An increment is the level that defines ''significant'' deterioration but does not prohibit all deterioration of air quality. The PSD program allows for some increase in effects when necessary to ensure that economic growth may continue to occur consistent with the preservation of clean air resources.

(2) *Increments are not intended to remedy existing effects but to maintain levels of air quality achieved by other programs.* Because an increment is an allowable level of increase, it does not function to reduce existing air pollution. The PSD program is intended to protect against significant deterioration of the air quality in attainment and unclassifiable areas from the construction and operation of new and modified sources of a particular size. Thus, the PSD program limits increases in emissions from these sources but does not seek to reduce emissions or ambient air pollutant concentrations to a particular level. The increments established by Congress were only intended to define the allowable levels of marginal increase in air pollution above a baseline concentration that are established in each area when the first major source applies for a PSD permit in that area. 42 U.S.C. 7479(4). As a result, we do not believe we are required to set increments at a level intended to alleviate existing adverse effects.

An increment is a marginal level of increase in air pollutant concentrations that functions to prevent significant deterioration of air quality. Thus, in evaluating the increment levels that are necessary to prevent significant deterioration of air quality, we consider that there are other programs authorized under the CAA that are operating (or will be operating) to reduce the adverse effects from existing air pollution sources. If we use an increment approach, these programs will serve the role of bringing existing emissions down, while increments included in our PSD regulations established under section 166 of the Act will be designed to limit increases in emissions from the construction of new major sources and the modification of existing ones.

For example, existing visibility problems are being addressed through implementation of the Regional Haze Program under sections 169A and 169B of part C.[24] Section 169A establishes as a national goal ''the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas which impairment results from manmade pollution.'' 42 U.S.C. 7491(a). In the 1990 Amendments, Congress added section 169B, which called for additional research into the visibility problem and directed EPA to issue regional haze rules taking into account such studies and reports within 18

[24] When the visibility provisions were enacted, the House committee report specifically recognized that the ''visibility problem is caused primarily by emission into the atmosphere of sulfur dioxide, oxides of nitrogen, and particulate matter * * *'' H.R. Rep. 95–294, at 204, reprinted in 4 Legislative History at 2671. NO_X may result in visibility impairment either locally (a brown plume effect) or contributing to regional haze, which has been recognized as primarily a fine particle phenomenon. 1995 Staff Paper at 89. For the reasons discussed earlier, we do not believe we need to consider PM effects in this reevaluation of the NO_2 increments.

months after receipt of a final report from the Grand Canyon Transport Visibility Commission. The EPA promulgated these regulations on July 1, 1999. 64 FR 35714 (''Regional Haze rule''). The main components of this rule require States to: (1) Submit SIPs that provide for ''reasonable progress'' toward achieving ''natural visibility conditions'' in Class I areas; (2) provide for an improvement in visibility in the 20 percent most impaired days; (3) ensure no degradation in visibility occurs on the 20 percent clearest days; and (4) determine the annual rate of visibility improvement that would lead to ''natural visibility'' conditions in 60 years.

At the time that the Regional Haze Program was established, a Congressional committee recognized that the PSD program was not necessarily created to alleviate existing adverse effects resulting from contributions by existing sources. When it was writing section 169A of the Act at the same time that it established the PSD program, the House recorded the following observations in a committee report:

> [T]he committee recognizes that one mechanism which has been suggested for protecting these areas, the mandatory Class I increments of new section 160 ('Prevention of Significant Deterioration') do not protect adequately visibility in Class I areas. First, inadequately controlled, *existing* gross emitters such as the Four Corners plant would not be affected by the significant deterioration provisions of the bill. Their emissions are part of the baseline, and would not be required to be reduced by new section 160 of the act.

H. Rep. 95–294, at 205, 4 Legis. History at 2672 (emphasis added). This statement indicates that protection of air quality values under section 166(c) is provided when an increment limits significant deterioration of air quality, but does not require an increment that eliminates all adverse impacts on air quality values, such as visibility, that may be caused by existing sources.

In addition, in the 1990 Amendments, Congress enacted title IV to address the problem of acid deposition. We believe this supports an interpretation that the PSD measures called for in section 166 need not eliminate acid deposition impacts that may be caused by existing sources. Rather, under an increment approach, our view is that the PSD program is intended to focus on establishing a marginal level of increase in emissions that will prevent significant air quality deterioration and, in conjunction with AQRVs identified by the FLM, provide protection against increases in adverse effects resulting from acid deposition.

Reduction of NO_X emissions from existing sources is also required under EPA's NO_X SIP Call and the proposed CAIR. Under both programs, emissions of NO_X are regulated as a precursor of either ozone or fine PM, or both. The programs are based on State obligations to address interstate transport of pollution under section 110(a)(2)(D) of the Act, which is discussed in more detail above in the section on our legal authority.

The NO_X SIP Call requires the affected States and the District of Columbia to submit SIP revisions that reduce NO_X emissions by specified amounts by a specified date. The EPA has projected that over 1 million tons of NO_X per ozone season will be reduced as a result of this particular program.

As proposed, the CAIR requires that emissions reductions be implemented in two phases, with the first phase in 2010 and the second phase in 2015. The EPA's estimates of the NO_X emissions reductions that would result from the CAIR proposal are 1.5 million tons by 2010 and an additional 0.3 million tons by 2015 (for a total of 1.8 million tons).

In areas where the PSD baseline has not yet been established, the emissions reductions achieved by these programs may result in lower baselines being established when triggering does occur. Then, the increments we are reevaluating in this rulemaking will begin to operate as an allowable level of marginal increase that prevents the significant deterioration of air quality in attainment areas. This approach is consistent with Congressional intent that the baseline concentration, representing the air quality in an attainment area subject to PSD, be established on the date of the first application for a permit by a PSD source affecting that area. 42 U.S.C. 7479(4). *See also, Alabama Power* v. *Castle,* 606 F.2d 1068, 1088–89 (D.C. Cir. 1979).

(3) *Increments should be uniform across the nation.* When we use the framework of an area classification system in PSD regulations for a particular pollutant, we believe that we must establish a single increment for each class of area such that this allowable level of increase applies uniformly to all areas in the nation with that particular classification. This is necessary to ensure equitable treatment by allowing the same level of economic growth for all regions of the country that a State elects to classify in a particular manner. We believe that Congress intended for the PSD program to allow air quality in each area of the country with the same classification to change by the same amount in order to avoid a disproportionate impact on growth that might disadvantage some communities. The following statement from the legislative history of the PSD program supports our interpretation:

> Some suggestions were made that the pollution increments should be calculated as a function of existing levels of pollution in each area. But the inequities inherent in such an approach are readily evident * * *. The committee's approach—increments calculated as a percentage of the national standard—eliminates those inequities. All areas of the same classification would be allowed the same absolute increase in pollution, regardless of existing levels of pollution.

H. Rep. 95–294, at 153, 4 Legis. History at 2620. *See also* S. Rep. 95–127, at 30, 3 Legislative History at 1404 (''These increments are the same for all nondeterioration areas, thus providing equity for all areas.''). This indicates that Congress did not intend to impose more stringent restrictions under the PSD program on particular areas of the country based on their current levels of air pollution, unless, of course, the current levels are so near the NAAQS that the full amount of incremental change cannot be allowed.

Instead, Congress generally left it up to the States to determine the areas where a greater or lesser level of protection was needed. Although Congress established certain parks and wilderness areas as mandatory Class I areas, it classified all other areas as Class II areas and gave the States the power to reclassify these areas to Class I or Class III to provide for greater protection of air quality or allow more growth, depending on the values of the State and the community in that area. This allows the States to make their own choices about which areas require more protection of air quality and which areas should be allowed more growth consistent with the protection of air quality. *See* H.R. Rep. 95–294, at 153–154, 4 Legislative History at 2620–2621.

We believe that the same equitable considerations are applicable when we establish PSD regulations containing increments and area classifications under section 166 of the Act. Since Congress did not intend for the increments it established to impose a disproportionate impact on particular areas, we do not believe it intended to grant EPA the power to do so under section 166 of the Act. Thus, to treat all areas of the country in an equitable manner, it is necessary for us to establish uniform increments for NO_2 that establish the same maximum allowable increase for each class of area.

However, we must also weigh these equitable considerations against the unique variability in ecosystem effects that may result from NO_X emissions. In our review of the NO_2 NAAQS, we observed that ''a great degree of diversity exists among ecosystem types, as well as in the mechanism by which these systems assimilate nitrogen inputs.'' 60 FR at 52881. As a result, we concluded, ''the relationship between nitrogen deposition rates and their potential environmental impact is to a large degree site or regionally-specific and may vary considerably over broader geographical areas or from one system to another because of the amount, form, and timing of nitrogen deposition, forest type and status, soil types and status, the character of the receiving waterbodies, the history of land management and disturbances across the watersheds and regions, and exposure to other pollutants.'' *Id.* Consistent with these earlier conclusions, our more recent review in this rulemaking action of the studies on the effects of NO_X indicates that some levels of air pollution resulting from emissions of NO_X may contribute to adverse effects on welfare, air quality values, and parks in some areas of the country while not necessarily causing the same degree of effects on similar ecosystems and receptors in other areas of the country.

In light of the equitable considerations discussed earlier, we believe the best way to address the potential regional variability in the occurrence of effects attributable to NO_X emissions is to retain uniform national increments that accommodate growth and provide a basic degree of protection across the country, but to augment this with a procedural review that will require permitting authorities to consider adverse effects that may occur in more sensitive areas before the increment is consumed. This approach, which we believe is reflected in existing regulations, allows EPA to achieve the equity of setting a uniform increment level for all areas with a particular classification, while directing that permitting authorities conduct a more intensive, site-specific review to identify effects that might occur in a more sensitive area but not necessarily in all areas of the country with that classification.

This approach is embodied in the framework for the PSD regulations for NO_X that we adopted in 1988. As described above, each permit application is subject to an ''additional impacts'' analysis that allows the permitting authority to consider the sensitivity of a particular area. In Class I areas, the FLM review procedures provide further protection, notwithstanding the existence of a Class I increment, for the air quality values and the national parks and wilderness areas included in Class I areas.

As we noted earlier, we believe our ultimate obligation under section 166 of the Act is to establish a system of regulations containing provisions that collectively satisfy the content requirements in sections 166(c) and 166(d) of the Act. Thus, we think that Congress contemplated that we would consider the entire group of regulations when establishing particular aspects of those regulations. As a result, we believe it is appropriate and consistent with our statutory obligations to consider the protection provided by the additional impacts analysis and the FLM review of AQRVs when evaluating the level of NO_2 increments. Therefore, to achieve equity and protect against effects that are variable across regions of the country, we believe each of the NO_2 increments should be set at a level that reasonably protects air quality values, health and welfare, and parks and special areas across the country while also balancing the need to allow economic growth. To the extent necessary, the case-by-case additional impact analysis and FLM review should provide additional protection of air quality in particular areas that may be more sensitive to nitrogen loadings resulting from NO_X emissions.

Because of the equitable considerations and State prerogatives to classify areas described above, we do not believe that Congress intended to create a federally imposed system of regional or locally based measures or to authorize EPA to do so to address any variability in potential effects. Likewise, we do not believe it is permissible or appropriate for us to establish increments at a level that prevents any adverse impact on the most sensitive receptors in any part of the country. Although such a ''lowest common denominator'' approach might achieve uniformity across all areas, it would unduly restrict growth in those areas of the country where adverse effects may not occur at a higher level. In addition, as discussed further below, the available research on the effects of NO_X does not readily provide sufficient information to identify that level of increase below which significant effects would not occur to the most sensitive receptors in any area of the country.

Thus, EPA believes that the factors applicable under section 166(c) of the Act are met when we establish a uniform national increment for NO_2 for each class of area that is augmented by an additional case-by-case procedural review to identify and protect against variable effects that could occur in especially sensitive areas before the increment is fully consumed.

(4) *Evaluation of effects at levels of increase below the ''safe harbor'' level.* With the above considerations in mind, we have reviewed the available effects information to determine whether there is a basis for using it to either support the existing increments or to find them inadequate for satisfying the criteria, goals, and purposes set forth in sections 166(c) and 160 of the Act. Selecting a framework for applying the criteria is an important first step. Because the increments define an allowable change in air quality rather than establish a uniform air quality ''ceiling'' for a particular pollutant, we believe that the basis for determining the adequacy of the increments should be a comparison of the maximum allowable pollutant increase or change (ambient pollutant concentration that would result from full increment consumption) with the pollutant concentrations at which the effects of concern (particularly the adverse effects associated with air quality values under section 166(c) of the Act) may occur. This approach relies upon the premise that in specific attainment areas where adverse effects caused by existing emissions may be experienced, specific control strategies designed to adequately reduce current levels of emissions (and air pollution) will be evaluated and the most appropriate course of action determined independently from the PSD program.

The problem that EPA immediately faces in trying to make the necessary comparative analysis of the ''safe harbor'' levels with lower increment levels is that for the adverse effects identified, in most instances the pollutant concentrations at which the effects may occur are not well defined. Based on the availability of scientific and technical information available during the period when the NO_2 increments were promulgated in 1988 as well as for the periodic review of the NO_2 NAAQS completed in 1996, there is great uncertainty about the specific relationship between the pollutant and its precise role in causing the effect. Moreover, while more recent research and studies have shed new light on the mechanisms by which NO_2 contributes—both directly and indirectly—to known adverse environmental effects, efforts to establish quantitative relationships (as explained further below) are only now under way. Nevertheless, what is already known about some of these cause-effect relationships is also helpful

in enabling us to reach a conclusion about the adequacy of the current increment levels.

As described earlier in the preamble under the discussion of environmental effects, many of the adverse effects indirectly related to emissions of NO_X (NO and NO_2) are caused (or contributed to) largely by nitrogen compounds (*e.g.*, nitrates, nitric acid) which are the result of chemical transformations from NO_2 while in the atmosphere. Thus, in order to attempt to determine an acceptable level of increase for ambient NO_2 concentrations, it is necessary to understand the quantitative relationship between the emissions of NO_2 and the adverse effect. This, in part, requires an understanding of the intermediate transformation processes, the deposition patterns and total quantities of those nitrogen compounds which may cause the effect of concern, as well as the nitrogen contribution to ecosystems from natural geobiochemical processes. Unfortunately, the atmospheric chemistry associated with NO_X is significantly more complex than that for SO_2. In addition to wet and dry nitric acid and nitrate aerosols such as ammonium nitrate (NH_4NO_3), emissions of NO_X can also produce other end products, such as peroxyacetyl nitrates (PAN). Also, NO_X may result, either directly or indirectly, in the formation of oxidant species such as the OH radical, O_3, and H_2O_2, which alter transformation rates of NO_X. (Butler, 2003.)

The difficulty of establishing these relationships is further illustrated by EPA's experience in evaluating the feasibility of setting an acid deposition standard. Under section 404 of the 1990 Amendments, Public Law 101–549, Congress directed EPA to conduct a study of the feasibility and effectiveness of an acid deposition standard(s), to report to Congress on the role that a deposition standard(s) might play in supplementing the acidic deposition program adopted in title IV, and to determine what measures would be needed to integrate an acid deposition standard with that program. The EPA completed this study, ''Acid Deposition Feasibility Study, Report to Congress'' (1995), which concluded that current scientific uncertainties associated with determining the level of an acid deposition standard(s) are significant, and did not recommend setting an acid deposition standard. *See State of New York* v. *Browner,* 50 F. Supp. 2d 141, 149 (N.D.N.Y. 1999) (rejecting States' claim that section 404 required that the report include a deposition standard that would be sufficient to protect sensitive aquatic and terrestrial resources, and affirming EPA interpretation that duty was limited to ''consideration of a description'' of such standards). While EPA has recognized that programs, such as the proposed CAIR (69 FR 4566, Jan. 30, 2004)), that are intended to achieve NO_X emissions reductions pursuant to other statutory provisions, will help mitigate acid deposition problems, none of those programs purport to set an acid deposition standard.

Some recent studies are attempting to address the various parameters that together could establish a quantitative relationship between emissions of NO_X and the adverse environmental effects resulting from nitrogen deposition and acidic deposition from nitrates. While some study results provide evidence of a relationship between NO_X emissions and precipitation (wet deposition) NO_3^-, the results of efforts to establish a quantitative relationship between NO_X emissions and total (wet and dry) nitrogen deposition have been inconclusive (Butler, 2000, 2003).

Other recent studies examine the various sources of the nitrogen input (industry, transportation, agriculture) the geographical location of different nitrogen loadings, trends in deposition rates, as well as the specific effects of nitrogen deposition on specific ecosystems. These studies in general emphasize the importance of reducing current emissions of NO_X as part of a strategy for reducing observed impacts and promoting ecosystem recovery. However, such studies have not yielded the type of information needed to adequately evaluate different levels of maximum allowable pollutant increases with respect to the specific impacts such levels would have on the ecosystems.

We have evaluated whether the concept of a ''critical load,'' as described more fully in section VII of this preamble, could be used to identify an alternative increment level, but we believe our current knowledge about critical loads for nitrogen does not provide a sufficient basis for establishing a uniform, national standard such as a PSD increment. Because of the vastly differing sensitivities and potential effects associated with ecosystem resources in different regions of the country, we believe that critical loads do not represent an appropriate tool for setting a single, uniform, national standard, such as a PSD increment level. Even in cases where the deposition rate of a pollutant is relatively consistent from one location to another, the sensitivity of individual ecosystems varies greatly depending on a number of different variables, including climate, diversity of species, history of land use, and the existence of other natural and anthropogenic stresses.

Identifying the cause-effect relationship of nitrogen deposition on various ecosystems can be problematic for a number of other reasons as well. Some effects are believed to be the result of combined pollutant impacts, such as the acidification of lakes from both sulfur and nitrogen deposition. Some water systems have exhibited high levels of nitrogen in the absence of anthropogenic sources. In addition, some effects of changing deposition may take years before the ecosystem comes into balance with the cumulative amounts of nitrogen inputs. A noted problem in the West is that nitrogen deposition can include the combined contributions of emissions from NO_X (which form nitrates and nitric acid in the atmosphere) and ammonia (ammonium). Finally, current levels of nitrogen deposition may provide passive fertilization for forests and terrestrial ecosystems where nutrients are a limiting factor and for some croplands.

As discussed in the welfare effects section (V.C.2), although we are seeing effects at current nitrogen deposition rates, for the above reasons we believe that it is not technically or practicably feasible to identify a basis for concluding that the existing NO_2 increments are inadequate to provide protection against the types of adverse effects on ecosystems that may occur in some areas notwithstanding compliance with the NAAQS. In particular, it is not possible to determine a different level of increment protection that would define a significance level for ecosystem effects associated with emissions of NO_X. Currently available information does not provide a nationally applicable, quantitative basis for revising the levels of the existing NO_2 increments. The EPA solicits comment on possible approaches that should be considered, including the concept of critical loads, for further evaluating the existing NO2 increments. However, under today's action, we are not proposing any changes to those increments.

(5) *Qualitative consideration of factors.* Because we cannot use the effects data to quantify an alternative level of increase to the ''safe harbor'' that protects air quality values, health and welfare, and parks while ensuring economic growth consistent with the preservation of clean air resources, we must instead make a qualitative judgment whether the existing increments or some alternative meets

the applicable factors. In this situation, we believe that determining the increment levels that satisfy the factors applicable under section 166(c) is ultimately a policy choice that the Administrator must make, similar to the policy choice the Administrator must make in setting a primary NAAQS ''with an adequate margin of safety.'' *See Lead Industries Ass'n* v. *EPA*, 647 F.2d 1130, 1147 (DC Cir. 1980) (where information is insufficient to permit fully informed factual determinations, the Administrator's decisions rest largely on policy judgments). Using a similar approach is warranted because both section 109 and section 166 place great weight ''in the Administrator's judgment'' in making choices regarding an adequate margin of safety or protecting against any effects that may still occur—both areas of inquiry characterized by great uncertainty. Thus, in the process for setting NAAQS, the Administrator looks to factors such as the uncertainty of the science, the seriousness of the health effects, and the magnitude of the environmental problem (isolated or commonplace). *E.g.*, 62 FR 38652 (July 18, 1997) ($PM_{2.5}$ NAAQS).

A pure environmental protection analysis (protecting AQRVs, health and welfare, and parks) might suggest that we permit no or minimal increases in some areas because there are some data indicating that an effect may be attributable to NO_X emissions. However, as explained earlier, we do not believe that Congress intended for the PSD program to eliminate all adverse effects. Thus, rather than just seeking to eliminate all effects, we must attempt to identify a level of increase at which any additional effects beyond existing (or baseline) levels would be ''significant'' and protect against those potential effects. Furthermore, we need to ensure that our increments provide room for economic growth. Congress intended for EPA to weigh these considerations carefully and establish regulations that balance economic growth and environmental protection.

In making this policy judgment, we give particular weight to the policy judgment that Congress made when it set the statutory increments as a percentage-of-the-NAAQS. In section 166 of the Act, Congress directed that EPA study the establishment of PSD regulations for other pollutants for which Congress did not wish to set standards at the time. Congress' own reluctance to set increments to prevent significant deterioration of air quality due to emissions of NO_X, and the provisions ensuring time for Congressional review and action, suggest that Congress intended for EPA to avoid speculative judgments about the science where data is lacking. Having conducted such a study and finding difficulty establishing a direct relationship between adverse effects and particular levels of increase in pollution, we believe it is appropriate to consider the approach that Congress used. Thus, in the absence of specific data showing that a marginal increase of a particular level below the ''safe harbor'' would better protect health, welfare, parks, and air quality values, we give weight in our qualitative analysis of the factors applicable under section 166(c) to the method that Congress used to establish the statutory increments.

In making this qualitative judgment, we also consider the overall regulatory framework that we have established in the PSD regulations for NO_X. This framework includes a case-by-case analysis of each permit application to identify additional impacts (*e.g.*, soils and vegetation), a special review by the FLM of potential adverse effects on air quality values in parks and special areas, and a requirement that all new and modified sources install BACT. In addition, the area classification system ensures that there will be economic growth in particular areas that are consistent with the values of each State and individual communities within States.

When coupled with the overall framework of PSD regulations applicable to NO_X, we believe the ''safe harbor'' approach for setting the increment levels is sufficient to satisfy the factors applicable under section 166(c). This approach ensures economic growth and that each area receives a basic level of protection consistent with Congressional policy and an additional case-by-case review of effects on air quality values and parks and special areas. Under this circumstance, we see no basis to deviate from the approach established by Congress for the statutory increments. Thus, we propose to retain the existing NO2 increments that were established at the ''safe harbor'' level using the percentage-of-NAAQS approach. We request comment on this proposal, the supporting analysis, and reasoning described above.

b. Additional Increments

(1) *Pollutant form for which increments for NO_X are set.* Another disputed issue in the *EDF* v. *EPA* case was EPA's action in 1988 to establish an increment for only one form of NO_X, *i.e.*, NO_2. We promulgated increments for NO_2 in 1988 because NO_2 was the only form of NO_X for which we had established a NAAQS at that time. However, in *EDF* v. *EPA*, the court held that section 166(c) of the Act ''commands the Administrator to inquire into a pollutant's relation to the goals and purposes of the statute, and we find nothing in the language or legislative history suggesting that this duty could be satisfied simply by referencing the ambient standards.'' 898 F.2d at 190. Thus, in this rulemaking action on remand, we must evaluate whether, considering the factors applicable under section 166(c), we should promulgate additional increments for other forms of NO_X.

Under the ''contingent safe harbor'' approach discussed above, we begin our analysis with ''safe harbor'' increments that only address increases in ambient NO_2 concentrations. Since 1988, EPA has not identified a basis to establish a NAAQS for any form of NO_X other than NO_2. Thus, it remains the case today that the only NAAQS established for NO_X are the current NO_2 NAAQS which have not changed since 1971. We believe that increments based on the same pollutant for which we have a NAAQS are the ''safe harbor'' for purpose of this rulemaking. Establishing increments for this form of NO_X is ''at least as effective'' as the statutory increments in section 163 of the Act. Congress established statutory increments in section 163 for only those forms of PM and sulfur oxides for which we had promulgated a NAAQS.[25] As discussed above, the need for an increment necessarily derives from the establishment of a NAAQS, which is the basic measure of air quality under the CAA. Thus, an increment based on this basic measure of air quality is ''at least as effective'' as the statutory increments in section 163 of the Act. The court in *EDF* v. *EPA* rejected the argument that increments based on the same form of NO_X as the NAAQS were not ''as effective as'' the increments in section 163. 898 F.2d at 190.

We noted earlier in this preamble that seven oxides of nitrogen are known to occur in the atmosphere. (*See* footnote 9.) Among these, EPA recognizes the significant role that nitrates play in many of the indirect welfare effects of NO_2. Nitrate is a principal contributor to the effects on ecosystems of both nitrogen deposition (eutrophication and acidic deposition) and visibility impairment (regional haze). As such,

[25] Since that time, we have refined the original NAAQS for PM (then measured as TSP) to focus on coarse (PM_{10}) and fine ($PM_{2.5}$) particulate matter. We subsequently established increments for PM_{10} in accordance with section 166(f) of the Act. 58 FR 31622 (June 3, 1993). We are considering establishing increments for $PM_{2.5}$.

nitrates conceivably could represent a form of NO_X which should be considered for regulation under the PSD increments. For several reasons, however, EPA believes that it is not necessary to adopt individual increments for nitrate.

First, nitrate compounds found in the atmosphere generally are formed from the oxidation of NO and NO_2 as they are transported in the atmosphere.[26] Thus, the existing NO_2 increments can generally be viewed as a limiting factor in the formation of nitrate concentrations downwind. By limiting the allowable increase in ambient concentrations of NO_2 in the immediate area surrounding proposed new or modified PSD source, some limit can effectively be placed on downwind NO_3^- formation as well.

Another consideration is that ambient nitrate can often exist in the atmosphere in particulate form, *e.g.*, ammonium nitrate or nitric acid vapor. Nitric acid (a nitrate formed through the gas-phase reaction of NO_2 and OH), which plays a key role in acid rain, in its gaseous phase can also react with airborne particle surfaces to form nitrate salts. When ambient concentrations of ammonia and nitric acid are sufficiently high, ammonium nitrate can be formed. Nitrate particulates contribute to regional haze. The EPA believes that it can more effectively regulate nitrates particulate under the PM program. In fact, the effects of nitrate particulate were considered in setting the NAAQS for $PM_{2.5}$ and will be considered in the development of the upcoming PSD increments for $PM_{2.5}$ as well.

Finally, EPA does not believe that sufficient information is available to adequately establish levels for nitrate increments, even if it were to determine that the establishment of increments for nitrate are necessary to satisfy the factors applicable under section 166(c). We described the difficulties of establishing alternative increment levels using the available information in the previous section.

In the absence of information showing that increments based on the same pollutant of the NAAQS fail to protect air quality values, health and welfare, and parks and special areas, from emissions increases associated with new and modified PSD sources, we propose to retain the ''safe harbor'' increments without adopting additional increments for NO_X. Under these circumstances, the NAAQS provides a reasonable benchmark for identifying the pollutant to be used in an increment. Section 160(1) of the Act is expressed by using the NAAQS as a benchmark and also uses standards that mirror the standards applicable to the NAAQS-setting process—''protect public health and welfare.'' The court in *EDF* v. *EPA* rejected use of the NAAQS as the ''sole basis'' for deriving the increments for NO_X but did not preclude EPA from adopting only increments based on the same pollutant as the NAAQS when EPA has determined that such increments are sufficient to satisfy the special values embodied in the factors applicable under section 166(c) of the Act. *See* 898 F.2d at 190.

Thus, we propose to retain the NO_2 increments and do not propose to establish additional increments for other forms of NO_X. We request comment on this proposed action and our basis for it.

(2) *Time periods for increments.* In accordance with the court's opinion in *EDF* v. *EPA*, we have also evaluated whether we should promulgate additional NO_2 increments based on a short-term averaging time. In the 1988 rule, EPA did not set short-term NO_2 increments because a short-term NAAQS for NO_2 that would define short-term air quality for NO_2 did not exist. However, the court directed us to evaluate whether, considering the factors applicable under section 166(c), we should promulgate additional increments for short-term averaging times. 898 F.2d at 190.

Under the ''contingent safe harbor'' approach discussed above, we begin our analysis with the ''safe harbor'' increments that are based on the same annual averaging time used in the NAAQS. Since 1988, EPA has not found cause to promulgate a NAAQS for any averaging time shorter than annual. Thus, since this is the only averaging time used in the current NAAQS, we consider an increment that employs this averaging time to be a ''safe harbor'' that is ''at least as effective'' as the statutory increments in section 163 of the Act. The increments listed in section 163 of the Act are based on the same averaging times that were contained in the NAAQS at the time Congress adopted this provision. The NAAQS are the basic measure of air quality under the CAA. Therefore, an increment that uses this standard as a benchmark is ''at least as effective'' as the statutory increments in section 163 of the Act. The court in *EDF* v. *EPA* rejected the argument that an increment based on the same averaging time as the NAAQS was not ''as effective as'' the increments in section 163. 898 F.2d at 190.

We have further analyzed whether a short-term increment is necessary to satisfy the factors applicable under section 166(c) of the Act. Based on this review, we believe that an annual average increment for NO_2 is sufficient to protect air quality values, health and welfare, and parks and special areas from potential short-term effects. Thus, we propose to retain the existing annual NO_2 increments and do not propose to adopt additional increments for shorter time periods.

The same reasons that supported our decision not to set a short-term NAAQS for NO_2 weigh against setting a short-term NO_2 increment. We have not identified health effects from short-term exposure to NO_2 that occur in areas in attainment with the NAAQS. In addition, we do not have sufficient information to conclude that the welfare effects within the scope of our review are caused solely by short-term NO_X concentrations.

In our last review (1995–1996) of the NO_2 NAAQS, EPA reviewed the short-term effects of NO_2 on human health and concluded that a short-term standard was not justified. With regard to public health, the Administrator concluded that the annual standard of 0.053 ppm NO_2 provides ''substantial protection'' against the identified health effects (mild changes in pulmonary function or airway responsiveness in sensitive individuals) associated with short-term peaks occurring in the range of 0.2 to 0.5 ppm—almost one order of magnitude higher than the annual standard. 60 FR 52875, 52879–80 (October 11, 1995). The adequacy of the annual standard to protect against these potential short-term effects was further supported by the absence of documented effects in some studies at higher concentrations (3 ppm to 4 ppm). The Administrator also took into account that where the annual NO_2 standard is attained—currently all areas of the country—the occurrence of 1-hour NO_2 values greater than 0.15 ppm would be unlikely. *Id.*

With respect to public welfare effects from NO_2, the Administrator also concluded that the impact on terrestrial vegetation from short-term exposures to NO_2 under existing ambient levels is insignificant and did not warrant a short-term standard (1995 Staff Paper, p. 91). The Administrator also considered the welfare impacts from nitrates during the last review of the NO_2 NAAQS. Although we believe we are not required to consider these PM impacts in selecting measures to prevent significant deterioration of air quality due to emissions of NO_X under section 166(a), we find it noteworthy that none of the welfare impacts from nitrates were attributed to short-term exposure

[26] Another source of nitrates, not associated with emissions of NO_X, is the nitrification of ammonium by bacteria in stream beds.

to nitrates and that significant uncertainties in the data were recognized. Even in those cases where nitrogen deposition was shown to cause episodic or ''short-term'' effects, the problem was typically the result of a long-term accumulation of nitrogen compounds that were released suddenly to the ecosystem (*e.g.,* snowmelt runoff to lakes and streams) rather than the result of short-term concentrations of nitrogen compounds in the air.

The conclusions from the last NAAQS review regarding the lack of a quantitative basis for establishing any short-term NO_2 standard were also reported in an EPA document issued in 1997, entitled ''Nitrogen Oxides: Impacts on Public Health and the Environment.'' *Id.* at 33 (''While short-term effects from NO_2 are documented in the scientific literature, the available information is insufficient to provide an adequate scientific basis for establishing any specific short-term standard.'').

Additionally, independent of the short-term exposure issue, as discussed in another section of this preamble, EPA has previously identified problems that preclude the establishment of a national standard to protect against eutrophication and acid deposition. These include: (a) The site-specific nature of such impacts (*e.g.,* existing levels of nitrogen in the ecosystem and sensitivity of vegetation to additional inputs), which cannot be addressed by a uniform national standard; and (b) significant uncertainties over the level of contribution of NO_X sources to nitrogen deposition, determining whether an ecosystem was nitrogen saturated, and a lack of data establishing the quantitative levels of concern. 60 FR 52874, 52884 (October 11, 1995).

EPA has also recognized that NO_X results in the formation of ozone and nitrate particulates under certain conditions. Although ozone, PM_{10}, and $PM_{2.5}$ have short-term NAAQS to protect against public health effects associated with short-term exposure to these pollutants, EPA does not consider the impacts from these criteria pollutants, because it interprets section 166 to require consideration of these criteria pollutants separate and distinct from the duty to consider NO_X.

Thus, considering the factors applicable under section 166(c), EPA's proposed option 1 is to retain the annual average increments and not establish any additional increments based on a shorter averaging time. We request comment on this option and our basis for proposing it.

B. Regional Cap and Trade Program

EPA's second proposed option for achieving the goals and objectives set forth in the Act to prevent significant deterioration of air quality due to emissions of NO_X is to create an incentive for the States to implement a market-based cap and trade program to achieve the goals and purposes of PSD. Under this approach, we would permit States that adopt a cap and trade program under specific CAA programs being considered by EPA to implement this cap and trade program in lieu of an increment system for NO_X. Thus, States would not need to require source-specific compliance demonstrations for the NO_2 increments under their PSD regulations. This cap and trade program would have to be included in the EPA-approved SIP for each affected State and would have to satisfy the requirements of sections 166(c) and 166(d) of the Act.

Under this option, we propose a finding that a cap and trade program with specific elements and characteristics would be sufficient to fulfill the requirements of section 166, and thus obviate the need for States to implement the NO_2 increments and conduct case-by-case analyses of whether a proposed new or modified major source would cause or contribute to an exceedance of an increment. We propose to allow States to request elimination of the NO_2 increments from their PSD programs following their submission of a SIP revision that contains a cap and trade program with these specific elements.

EPA believes that the requirements of section 166 to prevent significant deterioration of air quality could be satisfied if States were to adopt the model EGU cap and trade program proposed for States in the eastern U.S. in the CAIR. Under the CAIR proposal, specific States in the East and Midwest would be required to submit SIPs that contain controls sufficient to eliminate specified amounts of NO_X emissions in order to reduce emissions contributing to nonattainment of the $PM_{2.5}$ and ozone NAAQS in downwind States. The EPA indicated in the CAIR proposal that States subject to CAIR have the option to achieve these reductions by participating in a regional cap and trade program for EGUs that would be administered by EPA. Because the CAIR cap and trade program would require all of the sources participating in the program to collectively meet a NO_X cap, and because this NO_X cap is set at a level that ensures significant NO_X reductions from the source categories covered by the cap, we believe it would be equivalent to or better than the existing NO_2 increment approach which allows increases in emissions. Thus, EPA proposes that States participating in this program could rely upon it as a substitute for implementing the existing increment system for NO_X.

EPA does not propose to adopt or require the States to implement such a cap and trade program under legal authority contained in the statutory provisions for PSD. However, we believe the air quality benefits that such a program would provide could serve to ensure that no significant air quality deterioration will occur. Based on our analysis supporting the CAIR proposal, we believe we can show that the CAIR model cap and trade program, when implemented, will achieve reductions in NO_X emissions from EGUs that are sufficient to compensate for projected increases in NO_X emissions from new or modified major sources in other source categories.

1. Description of Cap and Trade Programs

A cap and trade program is a market-based system that is designed to achieve required emissions reductions as needed to reach a particular emissions goal or cap within a predetermined geographical area. The basis for the overall emissions cap is typically to meet specific air quality objectives for the area or an affected downwind area. The emissions ''cap'' limits the total mass emissions for the area of interest by providing a limited number of emission allowances—each allowance authorizing the emission of a specific amount (*e.g.,* under title IV, one Acid Rain Program allowance authorizes the emission of one ton of SO_2).[27] Setting the emissions cap properly is key to achieving the desired environmental outcome. The allowance trading market provides a flexible mechanism for sources to find the least-cost reductions necessary to meet the cap.

For example, a source with a total of 400 allowances (400 tons of NO_X emissions) that is currently emitting 700 tpy of NO_X could, factoring in economic considerations, meet its requirement to turn in allowances equal to its emissions by (1) directly reducing current emissions by 300 tons via the installation of controls, fuel switching, reducing utilization, etc., (2) purchasing allowances from other capped sources within the prescribed region that have controlled their emissions beyond the level needed to meet their requirement to turn in allowances equal to their

[27] Under CAIR, EPA has proposed that more than one Acid Rain allowance would have to be turned in for each ton of SO_2 emissions.

emissions, or (3) some combination of these two approaches.

In the case of the NO_X SIP Call, the regionwide emissions cap was apportioned to individual States, thereby creating State-level ''emission budgets.'' Typically, the emissions from an entire sector are ''capped'' to ensure that emissions are not simply shifted from a capped unit to one that is not subject to the cap.

Once an emissions goal or cap is established for an area, the regulating authority allocates emission allowances to individual sources. In the case of the Acid Rain Program and the NO_X SIP Call, EPA and individual States, respectively, allocate the emission allowances to the sources. Sources comply with cap and trade programs by holding enough allowances in their account to cover their reported emissions. This is independent of the allocation process, as the allowance trading market allows sources to reduce their emissions or purchase additional emission allowances.

A cap and trade program is generally more cost-effective when more sources are eligible to participate and allowances can be traded without restriction. For example, in a regionally based cap and trade program, when affected States allow the sources within their jurisdiction to participate in the opportunity for emissions trading anywhere within the defined region, this trading affords the flexibility needed to enable sources to achieve established emission goals at lowest possible cost and encourage least-cost compliance over the entire region.

EPA and States have had considerable success achieving specific air quality goals through the implementation of cap and trade programs. Title IV of the 1990 Amendments established the Acid Rain Program to address the deposition of acidic particles and gases.[28] The Acid Rain Program utilizes a market-based cap and trade approach to require power plants to reduce SO_2 emissions to 50 percent of the 1980 emission levels. At full implementation after 2010, emissions will be limited (*i.e.*, ''capped'') to 8.95 million tons in the contiguous U.S. Individual existing units are directly allocated their share of the total emissions allowances, each allowance being an authorization to emit a ton of SO_2.

The cap and trade program under the Acid Rain Program has created financial incentives for electricity generators to look for new and low-cost ways to reduce emissions, and to improve the effectiveness of pollution control equipment, at costs much lower than predicted. The cap on emissions, automatic penalties for noncompliance, and stringent emissions monitoring and reporting requirements ensure that environmental goals are achieved and sustained, while allowing for flexible compliance strategies that take advantage of trading and banking. The level of compliance under the Acid Rain Program continues to be quite high, measuring over 99 percent.

In 1998, EPA promulgated a rule determining that 22 States[29] and the District of Columbia in the eastern half of the country significantly contribute to 1-hour and 8-hour ozone nonattainment problems in downwind States.[30] This rule, generally known as the NO_X SIP Call, required those affected jurisdictions to revise their SIPs to include NO_X control measures to mitigate the significant ozone transport. The NO_X SIP Call requires ozone season NO_X reductions which EPA determined by projecting NO_X emissions to 2007 for all source categories, and then reducing those emissions through controls that EPA determined to be highly cost-effective.[31] The affected States were required to submit SIPs providing the resulting amounts of emissions reductions.

Under the NO_X SIP Call, States have the flexibility to determine the mix of controls to meet their emissions reductions requirements. However, the rule provides that if the SIP controls EGUs, then the SIP must establish a budget, or cap, for EGUs. The EPA recommended that each State authorize a trading program for NO_X emissions from EGUs. Consequently, each State chose to adopt a cap and trade program based on a model rule developed by EPA. Some States essentially adopted EPA's full model rule ''as is,'' while other States adopted the model rule with changes to the sections that EPA specifically identified as areas in which States may have some flexibility.

Following the NO_X SIP Call, EPA carried out a broader assessment to determine the role of transported emissions from upwind States in contributing to unhealthy levels of fine particles ($PM_{2.5}$) and 8-hour ozone in downwind States. As a result, on January 30, 2004, at 69 FR 4566, EPA proposed to find that 29 States and the District of Columbia contribute significantly to nonattainment of the NAAQS for fine particles ($PM_{2.5}$) and/or 8-hour ozone in downwind States through transport of both NO_X and SO_2 emissions. In this proposal, originally known as the IAQR, EPA expressed its intent to assist States to attain the NAAQS in a way that is timely, practical, and cost effective, by proposing emissions reduction requirements for NO_X and SO_2, that would apply to upwind States.

The proposed IAQR (now known as the CAIR) requires certain States in the eastern portion of the U.S. to submit SIP measures to ensure that emissions reductions are achieved as needed to mitigate transport of $PM_{2.5}$) and/or ozone pollution and its main precursors—SO_2 and NO_X—across State boundaries.[32]

The proposed CAIR focuses on States whose emissions are significantly contributing to fine particle and ozone pollution on other downwind States in the eastern half of the U.S. The EPA identified emissions control requirements in the form of emissions budgets for 29 States and the District of Columbia on the basis of their contribution to nonattainment problems in the eastern half of the U.S. In determining States' emissions reduction requirements, EPA considered both the level and timing of the emissions budgets for the electric power industry at a regional level and State level. The EPA calculated the amount of each State's NO_X emissions reduction requirement based on reductions that were determined to be highly cost-

[28] The Acid rain Program requires a phased reduction of emissions of SO_2 (and, to a lesser extent, NO_X) from power generators that sell electricity.

[29] The original jurisdictions were: Alabama, Connecticut, Delaware, District of Columbia, Georgia, Illinois, Indiana, Kentucky, Maryland, Massachusetts, Michigan, Missouri, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Virginia, West Virginia, and Wisconsin. Subsequent court and EPA actions have slightly reduced the affected area.

[30] *See* ''Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone; Final Rule,'' 63 FR 57356 (October 27, 1998). The EPA also published two Technical Amendments revising the NO_X SIP Call emission reduction requirements (64 FR 26298, May 14, 1999; and 65 FR 11222, March 2, 2000).

[31] Under the NO_X SIP Call, States are only required to provide for the prescribed emissions reductions during the summer ozone season, and not year-round.

[32] Clean Air Act section 110(a)(2)(D) requires SIPs to contain adequate provisions prohibiting air pollutant emissions from sources or activities in those States that contribute significantly to nonattainment in, or interfere with maintenance by, any other State with respect to a NAAQS. EPA proposed the IAQR requiring SIP revisions in 28 States and the District of Columbia to reduce SO_2 and/or NO_X emissions, which are important precursors of $PM_{2.5}$ (NO_X and SO_2) and ozone (NO_X).

effective for large electric generating units (EGUs).[33]

EPA's proposal to use a cap based on highly cost-effective reductions from the electric power industry resulted in part from the fact that we had relatively complete information with respect to a number of key factors for that industry, that was not available for other sources. In addition, the electric power industry emits relatively large amounts of the relevant emissions. This factor was considered particularly important in a case where the Federal government was proposing a multi-State regional approach to reducing transported pollution.

As proposed, each affected State may independently determine which emissions sources to subject to controls, and which control measures to adopt to satisfy its reduction requirements. Alternatively, States were given the opportunity to participate in a regional cap and trade program to cap emissions from EGUs. The EPA indicated that it would administer the cap and trade program in a manner similar to the NO_X SIP Call program.

If the State chooses to control EGUs, then it must establish a budget—that is, an emissions cap—for those sources. The State may allow them to participate in the interstate cap and trade program, and, if so, the State must follow EPA's model rule, which contains required provisions including monitoring and reporting, applicability, and penalties. If a State wants to control EGUs but does not want to allow EGUs to participate in the interstate cap and trade program, the State has flexibility to do so, but the State EGU rule must contain certain minimum requirements such as capping emissions from EGUs and requiring part 75 monitoring.

A supplemental notice, issued on June 10, 2004 (69 FR 32684), provided additional detail on establishing State emissions budgets (*i.e.*, emissions reductions requirements) and significant additional information concerning EPA's model cap and trade program for EGUs, including, among other things, requirements for adopting the model cap and trade rules, flexibility afforded to States in adopting certain program features, and proposed regulatory language covering monitoring, recordkeeping, and reporting requirements.

[33] EPA based its emissions reduction requirements on reductions from large EGUs, *i.e.*, boilers and turbines serving an electric generator with a nameplate capacity exceeding 25 MW and producing power for sale. EPA further proposed that its model regional cap and trade program would apply to these units.

The emission reductions for NO_X expected under the CAIR are significant. Under the CAIR, EPA proposes to implement highly cost-effective reductions in two phases, with a Phase I compliance date of January 1, 2010, and a Phase II compliance date of January 1, 2015. When fully implemented, NO_X emission reductions would be substantial, measuring about 1.5 million tons in 2010 and 1.8 million tons in 2015. This represents a reduction approximately 65 percent below current NO_X levels.

2. Using a Cap and Trade Program in Lieu of an Increment System for NO_X

a. Cap and Trade Program Would Meet Requirements of Section 166

We believe that EPA's obligations to promulgate pollutant-specific PSD regulations for NO_X under section 166 of the CAA could be satisfied by giving States the option to implement a cap and trade regulatory framework for sources of NO_X that achieves the objectives of the PSD program. More specifically, we believe that a State cap on EGU NO_X emissions at the level described in the CAIR proposal for that State would achieve emissions reductions that would prevent significant deterioration of air quality from emissions of NO_X. By participating in this program and establishing a cap on NO_X emissions from EGUs at such a level, we believe States could achieve emissions reductions that produce ambient air quality levels equivalent to or better than the air quality allowed by the existing NO_2 increments and associated regulations. Moreover, a market-based cap and trade system would provide greater certainty that a specific level of emissions and air quality will be attained and maintained. Thus, we believe this may be an effective alternative to an increment system for NO_X.

(1) *Cap and trade framework fulfills obligations under section 166.* A cap and trade framework has many elements that satisfy the requirements of section 166(c), and such an approach would qualify as an ''other measure'' that is permissible under section 166(d). Thus, we propose to allow States, in lieu of an increment approach, to implement a cap and trade framework that, in combination with specific program elements, would meet the requirements of sections 166(c) and 166(d).

A cap on emissions that is allocated to States through budgets and to individual sources in the form of tradeable allowances provides a numerical measure against which permit applications can be evaluated. Under a cap and trade approach, States could prohibit the issuance of a PSD permit to a new or modified source that is subject to the cap unless the source can ensure that it will have a sufficient number of allowances to cover its proposed emissions increase. In evaluating a permit application for such a source, a permit writer would only need to verify that the permit requires the source to turn in allowances equal to its emissions each year. Implementation of the cap in this manner would not only satisfy the ''numerical measure'' requirement but, for those sources subject to the cap, would also be much more efficient and less time-consuming than the current process of conducting a source impact analysis to make sure the proposed emissions increase will not cause or contribute to an increment violation. Where a cap is used to achieve emissions reductions necessary to offset future growth by sources not subject to the cap, the permit writer would need to verify that emissions from the sources subject to the cap remain below required levels in order to issue a permit to a source not covered by the cap.

For PSD purposes, the market-based economic incentive inherent in a cap and trade framework could also provide a powerful stimulus for improved control technology at those sources subject to the cap. Even if new major sources and major modifications subject to the cap still have to meet requirements for BACT, the market for allowances could cause the facilities to select a more stringent BACT than would normally be selected. This, in turn, could also have a carry-over effect for subsequent BACT determinations involving other new sources that are not under the cap and trade program.

By allowing States to implement a regional cap and trade system, we could address the goal in section 160(4) of the Act to assure that emissions in one State do not interfere with the PSD program in another State. By first developing a stringent overall cap requiring substantial reductions in NO_X emissions (*e.g.*, 70 percent) for an entire region, the cap and trade program provides assurance to downwind States that emissions from upwind States will be effectively managed over time.

A cap and trade approach that operates in concert with the PSD preconstruction permit program would continue to fulfill the PSD goal in section 160(5) that any decision to permit increased air pollution not be made without careful evaluation and public participation. For reasons discussed below, major new sources and major modifications will still require

preconstruction permits and will have to comply with existing requirements for BACT. Thus, the public will have an opportunity to comment on each permit. However, the total allowable emissions from sources subject to the cap would be determined by regulatory authorities at the time that the cap is first developed. This process would still involve the evaluation required under section 160(5), but it would be conducted in up-front modeling to demonstrate the effectiveness of the cap, well in advance of any case-by-case permit review for sources subject to the cap that must obtain allowances and other sources outside the cap and trade system that could not be permitted without verification that emissions from affected sources do not exceed the cap. The public would have the opportunity to comment on the cap and thus could participate in any decision to establish a cap that allows increased air pollution. In the case of the NO_X cap set forth in the CAIR proposal, we recognize that this comment opportunity has passed. However, under this option we are not proposing to authorize States to adopt a program that would allow an increase in air pollution. We are proposing to allow States to implement, in lieu of an NO_2 increment, a cap and trade program that would achieve overall reductions in NO_X emissions by reducing emissions from certain sources to offset expected increases from other sources.

In order to fulfill the minimum requirements of section 166(d) under the ''contingent safe harbor'' approach, the cap selected for the cap and trade program would have to be at least as effective as the increments established by statute for PM and SO_2 in each affected State. As discussed above, these statutory increments were established as a percentage of the NAAQS, which are expressed as an ambient concentration of air pollution. As a result, the PM and SO_2 increments are also expressed in ambient concentration form and reflect the maximum marginal increase in air pollution concentration allowed in an attainment area. Under the cap and trade approach, we would allow States to establish a cap on total NO_X emissions from specific sources, expressed in terms of mass (tons) rather than an ambient concentration (*e.g.*, micrograms per cubic meter). To show that a particular emissions cap on specific sources is as effective as the concentration-based increments for PM and SO_2, we could rely on ambient air quality modeling that projects the concentration in each part of a State that would result from achieving a particular cap. A cap that maintains ambient concentrations of NO_2 within a certain percentage of the pre-cap NO_2 levels in most areas (assuming no increment violations currently exist) could then be demonstrated to be at least as effective as the statutory increments. However, to the extent that modeling is not available or is insufficient to make such a showing, we request comment on how we might use qualitative measures to identify whether a particular cap is at least as effective as the increments for PM and SO_2. We also request comment on whether, in all cases or some cases, this showing would be made inherently because an emissions cap less than or equal to the current level (or baseline level) is prima facie evidence that significant deterioration is being prevented.

A cap at a level that is as effective as the increments for PM and SO_2 would represent the ''safe harbor'' cap under the ''contingent safe harbor'' interpretation we are proposing today for section 166 of the Act. Under the cap and trade option, once the safe harbor is identified in this manner, we would then analyze whether it satisfies the requirements of section 166(c) by using the same balancing test discussed above. We would use this balancing test to determine whether a cap other than the ''safe harbor'' cap is needed to protect public health and welfare, as well as air quality values, while also allowing for economic growth consistent with the preservation of existing clear air resources.

We believe a cap and trade framework is particularly well-suited for striking the required balance between effective environmental protection at a cost that is not detrimental to economic growth. The capping of total emissions of pollutants throughout a geographic region, and over a period of time, ensures achievement of the environmental goal while allowing economic growth (new sources or increased use of existing sources). Within the constraints of the NAAQS and the available increment, the addition of new sources to the regulated sector or an increase in activity at existing sources can increase total emissions even though the desired emission rate control is in effect.

(2) *Cap on NO_X* emissions proposed in the CAIR would satisfy PSD requirements. Using this analytical approach, we propose to find that a cap and trade program that caps NO_X emissions at the levels proposed in the CAIR would fulfill the requirements of section 166 of the Act. We believe a cap on NO_X of this magnitude would strike the required balance between the environmental protection and the economic growth goals of the PSD program.

The proposed cap on NO_X emissions contained in the CAIR would be established, under the authority of section 110(a)(2)(D) of the Act, on the basis of emissions reductions that can be achieved by installing highly cost-effective controls on EGUs. We believe a cap on NO_X emissions at this ''highly cost-effective'' level would meet the objectives of PSD by providing the most protection for AQRVs, health and welfare, and parks and other special areas, while also ensuring economic growth.

Our analysis in the CAIR proposal showed that a cap on NO_X emissions of this magnitude in the relevant region would produce improvements in visibility and reduce acid deposition and eutrophication of water bodies in the eastern U.S. *See* 69 FR 4566, 4642 (Jan. 30, 2004) (Section X: Benefits of Emissions Reductions in Addition to the PM and Ozone NAAQS). A more detailed discussion of these beneficial effects is provided in a document prepared for the CAIR and is entitled ''Benefits of the Proposed Interstate Air Quality Rule (January 2004).'' This document is available in the Air Docket for this rulemaking and also at *http://www.epa.gov/air/interstateairquality/tsd0175.pdf*.

Allowing States to improve ecosystem health in this manner, through a cap and trade approach, would satisfy our obligation to develop regulations under section 166 of the Act that provide protection for AQRVs, health and welfare, and parks. Our analysis to date indicates that a cap on NO_X emissions equivalent to the reductions proposed in the CAIR for the eastern U.S. would reduce adverse effects on AQRVs, health and welfare, and parks in this region. 69 FR 32684, 32706 (June 10, 2004).

As noted above, visibility is an important AQRV that is affected by emissions of NO_X. Reductions in emissions of NO_X at the level required in the CAIR proposal are expected to contribute to substantial visibility improvements in many parts of the eastern U.S., including Class I areas such as the Great Smoky Mountains.

NO_X emissions may also contribute to effects on AQRVs, welfare, and parks resulting from the deposition of nitrogen onto land and water. The reductions in NO_X emissions required in the CAIR proposal are anticipated to reduce nitrogen deposition. Reductions in nitrogen deposition will, in turn, reduce acidification and eutrophication of water bodies and have a positive impact upon current eutrophic conditions in

estuaries and coastal areas in the eastern region of the country. Reductions in nitrogen deposition are likely to have positive effects on the health and productivity of some forest systems. Furthermore, reductions of this magnitude would reduce deposition that damages cultural monuments and other materials.

In the CAIR proposal, we assessed the quantitative impacts of the proposed levels of NO_X and SO_2 reductions on the acidification of water bodies. Areas especially sensitive to acidification include portions of the Northeast (particularly the Adirondack and Catskill Mountains, portions of New England, and streams in the mid-Appalachian highlands) and Southeastern streams. Modeling for the CAIR indicated that as a result of the proposed reductions in SO_2 and NO_X, lakes in the Northeast and Adirondack Mountains would improve in acid buffering capacity. Specifically, we found that no lakes in the Adirondack Mountains were projected to be categorized as chronically acidic in 2030 as a result of the reductions proposed for the CAIR. In contrast, 12 percent of these lakes were projected to be chronically acidic without the emissions reductions envisioned in the CAIR proposal. For Northeast lakes in general, 6 percent of the lakes were anticipated to be chronically acidic before implementation of the proposal. The NO_X and SO_2 reductions called for in the CAIR proposal are expected to decrease the percentage of chronically acidic lakes in the Northeast to 1 percent.

We believe State implementation of caps on NO_X emissions at the levels set forth in the CAIR proposal would provide sufficient protection for AQRVs in all the Class I areas in the eastern half of the U.S. However, we request comment on whether, even with caps of this magnitude, States would need to implement additional measures under the model cap and trade program to guard against localized adverse impacts, particularly in Class I areas.

(3) *Cap and trade approach would provide ambient air quality analysis for all sources.* Under this cap and trade program for EGUs, we do not believe it will be necessary for any sources to conduct a site-specific ambient air quality analysis for NO_X in order to satisfy the requirements of section 165(a)(3) of the Act by showing that the source will not cause or contribute to air pollution in excess of the NAAQS or an increment. In order to permit States to adopt the CAIR model cap and trade program in lieu of NO_2 increments, EPA or the States would have to perform an ambient air quality analysis to show that the NO_X caps applicable to each State achieve enough reductions to ensure that increases in NO_X emissions from all new or modified sources will not result in an exceedance of the NO_2 NAAQS or cause significant deterioration of air quality.

If States adopt a cap and trade system and are not required to enforce the increment, sources would not be required under section 165(a)(3) to show that they would not cause or contribute to a violation of the NO_2 increment. Instead, the cap and trade program would fulfill the function of the NO_2 increments to prevent significant deterioration of air quality. However, the requirements of section 165(a)(3) would still be satisfied because EPA, rather than each individual source, would demonstrate that the proposed cap is sufficient to either prevent significant deterioration of air quality due to emissions of NO_X or prevent a violation of the NAAQS. Thus, it would be redundant and unnecessarily costly to require an individual source to conduct a site-specific air quality analysis under a cap and trade approach. A source subject to the cap would only need to show that it has enough allowances to cover its emissions. The total amount and distribution of allowances would already reflect the results of an air quality analysis conducted by the regulatory authority.

b. Using a Cap and Trade Program To Streamline the PSD Permitting Process

The discussion above illustrates some ways in which a cap and trade program can enable substantial streamlining of the PSD permit process. Such streamlining, allowing applicants to avoid various preconstruction review requirements, could significantly reduce both the resources needed to acquire the necessary construction permit and the time required to complete the permitting process. Both are important ways in which the PSD permit program can be improved so long as adverse impacts on the environment are not allowed to occur as a result.

Even though the model cap and trade program, as presently conceived, would apply only to certain electric power plants, the benefits of the streamlined PSD permitting process would be shared with all PSD applicants because of the inherent ability of the cap and trade program to enable a reduction in total statewide NO_X emissions from EGUs sufficient to compensate for increases in NO_X emissions in the State from other source categories of NO_X emissions.

Under the approach being proposed today, States would have the option to revise their implementation plans to include the necessary regulations to enable participation in and implementation of the EPA-administered cap and trade program for NO_X under CAIR. Once the necessary revisions are in place and in effect under the applicable SIPs, EPA would respond affirmatively to State requests to use the cap and trade program in lieu of source-specific compliance demonstration for the NO_2 increments. The State would not be required to conduct source-specific increment analyses so long as the State continues to implement the cap and trade program.

The cap and trade program would not provide a full exemption from the PSD permitting process. All new major stationary sources and major modifications, including both EGUs directly affected by the cap and trade program and non-EGU major sources, would still have to undergo some preconstruction review for a PSD permit prior to commencing construction on new projects that result in a significant net emissions increase for NO_X. Such permits would still need to include emissions limitations based on BACT. The primary benefit comes from the fact that source-specific analyses for the NO_2 increments and NO_2 NAAQS would not be required, as described in the above subsection.[34]

We believe BACT must continue to apply because this PSD requirement is based on section 165(a)(4) of the Act, not section 166, and cannot be fulfilled by using a cap and trade approach. In contrast, the ambient air quality analysis that is based on section 165(a)(3) could be conducted for all sources at the time a cap is established and thus need not be conducted again for each individual permit.

The EPA believes other requirements pertaining to air quality analyses might also become unnecessary under a cap and trade approach. For example, statewide air quality improvements shown to result from a cap and trade program, as described elsewhere in this

[34] State participation in a cap and trade mechanism would not replace the statutory requirement to meet the NAAQS for NO_2 at the local level, but rather helps achieve this requirement through significant reductions in background concentrations. While States will continue to have the obligation and the authority under the Act to assure that the NAAQS for NO_2 is being met, we do not believe this needs to be done on a source-specific basis under the PSD permitting program, but rather through the ongoing monitoring of ambient air quality using EPA-recognized monitoring sites (showing current attainment status) and possibly periodic modeling assessments.

preamble, may eliminate the need for source-specific FLM review in Class I areas. In its 1988 PSD regulations for NO_X, EPA applied this process to NO_X on the basis of section 166. We also propose to retain this requirement under the increment option discussed above. However, we do not interpret section 165(d)(2)(C) to require this process for NO_X regulations established under section 166. Section 165(d)(2)(C) appears to be limited by its terms to only PM and SO_2. Nevertheless, we believe we have the authority to apply this FLM review process to NO_X on the basis of section 166. However, if the requirements of section 166 are otherwise fulfilled by a cap and trade approach, we believe section 166 would give us the discretion not to employ the FLM review process described in section 165(d)(2)(C).

We are also evaluating, and request comment on, whether certain source-specific preconstruction requirements could be satisfied by a cap and trade approach. These include (1) the air quality impact analysis required under section 165(a)(6) that is codified in regulations as the additional impacts analysis (*see, e.g.*, 40 CFR 52.21(o)); (2) the analysis of air quality, climate and meteorology, terrain, soils and vegetation, and visibility required under section 165(e)(3)(B); and (3) the air quality monitoring requirement in section 165(a)(7). In the latter case, PSD applicants, where applicable, must set up air quality monitoring stations and begin collecting relevant air quality data up to 12 months in advance of their submittal of a complete PSD application.

c. What Are Some Issues That Still Need To Be Resolved?

EPA recognizes certain significant issues that still need to be resolved before a comprehensive proposal can be set forth for public review and comment. These issues are presented here for public consideration.

(1) *Failure to show ongoing statewide downward trend in NO_X emissions.* The EPA recognizes that it may not be possible to show that NO_X emissions decreases in every State from CAIR at least offset the expected contribution of NO_X emissions that non-EGU sources make in the State. Consequently, in States where the amount of NO_X reductions achieved through regulating EGUs under the proposed cap and trade program does not more than compensate for increases at other sources of NO_X, it may be difficult to justify the use of the proposed cap and trade program in lieu of the existing increment system for NO_X.

Preliminary air quality modeling by EPA indicates that total NO_X emissions will generally decline on a statewide basis across the nation. ''Total NO_X emissions'' includes contributions from electric utilities, non-utilities, area sources, and mobile sources (onroad, nonroad). As proposed, the statewide emissions budgets for NO_X apply only to affected EGUS. Sources not covered under the regional cap and trade program may face emissions limitations stemming from other Federal or State programs (*e.g.*, Federal Motor Vehicle Emissions Reduction Program) but would not typically be restricted from potential increases under any kind of cap for the source category in general.

Thus, in cases where EPA's modeling cannot initially show a downward trend in statewide NO_X emissions for a particular State because increases from another source sector are exceeding the reductions being generated by EGUS under the cap and trade program, EPA tentatively intends to announce the continued applicability of that State's increment system for NO_X as part of the final rulemaking for today's proposed action.

As part of the comprehensive modeling demonstration that EPA intends to carry out to support this cap and trade option, we will assess the likelihood that total statewide NO_X emissions will continue to exhibit a downward trend for future years. The EPA believes that it will be necessary to conduct periodic assessments (*e.g.*, 10-year intervals) of air quality trends for NO_X in order to continue justifying the cap and trade program as a substitute for the increment system for NO_X. The EPA seeks comments on the frequency of any necessary periodic assessment, as well as other possible mechanisms for determining when adjustments may need to be made to the cap and trade program to retain its viability as a replacement for the increment system or other means of preventing significant air quality deterioration for NO_X.

(2) *States in which baseline date has not been set.* While we believe, in general, that the cap and trade program would fulfill the function of the increment to prevent significant deterioration due to emissions of NO_X, we realize there are certain cases where making this showing is more complicated. The baseline against which an increment is assessed is set at the point of the first permit application submittal by a new or modified source located in the area. For areas that have not yet had the first permit application submitted, no baseline has been triggered. For such areas, it is not immediately clear that a cap and trade program is at least as effective as the existing increment program. In the case that such an area had its first permit application submitted subsequent to the realization of the emission reductions anticipated from cap and trade in that State, then an equivalency demonstration between cap and trade and the increment program becomes more complicated.

One approach for addressing this situation would be to maintain the increment program as it currently exists for States in which few or no baseline dates have been set. We request comment on this approach and any other alternatives that address this situation.

(3) *Potential for localized adverse impacts resulting from emissions increases from new and modified sources.* The EPA is mindful of the potential for localized impacts of proposed sources and modifications even where statewide emissions are shown to be declining. In response to this concern, we note that the January 30, 2004, CAIR notice of proposed rulemaking addressed the issue of localized adverse impacts. In that notice, EPA indicated that experience under the title IV Acid Rain Program shows that ''the combination of trading with a stringent emissions cap results in substantial reductions throughout the region, with the greatest reductions achieved in the areas where pollution was originally the highest.'' (69 FR 4629–30) The notice further stated that other independent analyses have supported the finding that emissions trading under this type of program has not resulted in the creation of localized air quality problems.

We believe that this trend will continue to occur as a result of the extended use of a cap and trade program, so that localized air quality problems generally will not occur. Nevertheless, there may be the potential for localized adverse impacts, especially around Class I areas, particularly when a source of NO_X locating near a Class I area is not subject to a cap. While we believe this situation is unlikely to occur and are proposing to allow States that participate in the cap and trade programs under consideration to avoid some case-by-case source impact analyses under the preconstruction review for PSD. Below, we solicit comments on whether there is any need for a limited source-specific analysis under certain circumstances.

(4) *Role of the Federal Land Manager in the PSD permit process.* The Act provides that the FLMs have an affirmative responsibility to protect any AQRVs that have been identified for the

Class I areas under their control. Section 165(d)(2)(B). Section 52.21(p) of the PSD regulations requires notification of the applicable FLM when there is a potential for adverse Class I area impacts, and it authorizes direct involvement by the FLM in cooperation with the applicable permitting authority to identify any adverse effects on any known AQRVs.

Although the cap and trade program would significantly diminish the possibility that PSD sources would adversely impact a Class I area, in light of the overall NO_X reductions that would occur, the potential for some adverse impacts could still exist. In the absence of individual source-specific air quality analyses, which include data that may be reviewed by the FLM early in the permitting process to determine the potential for adverse impacts, FLMs would have to rely upon other means of detecting such adverse impacts at a point in the permitting process when remedial action could be sought.

One possible remedy to this potential problem is for EPA to include specific criteria that, if not satisfied by a particular PSD applicant, could enable the FLM, in cooperation with the permitting authority, to call for an analysis of source impacts on the Class I area. For example, regulatory procedures could be established which authorize an FLM to call for a source impact analysis when a proposed new or modified source locates within a specified distance (*e.g.*, 150 kilometers) of a particular Class I area and air quality in the area has shown little or no improvement since the cap and trade program took effect, as determined by ambient monitoring data. The EPA seeks public input on the above example, and other possible parameters, that could offer an effective way to ensure continued protection against localized adverse impacts from source growth occurring under a cap and trade program.

(5) *States that are not affected by the proposed CAIR.* Many States are not subject to the proposed CAIR, because we believe they do not significantly contribute to nonattainment or interfere with maintenance of NAAQS in another State. The EPA solicits comments on the best way to address States that are not subject to CAIR but that wish to participate in an EPA-administered cap and trade program, or that wish to develop a State cap and trade program to replace the increment system for NO_X currently in their State PSD program. We believe that a nationwide EPA-administered cap and trade program such as the Clear Skies Initiative could replace the increment system for NO_X. If that legislation is not enacted, States that are not part of a regionally based cap and trade program could develop a State cap and trade program that could be considered to meet the goals and purposes of the Act for preventing significant deterioration of air quality due to emissions of NO_X.

C. State Planning Approach

As a third option, we propose to allow a State to submit a demonstration that its SIP contains measures, in conjunction with Federal requirements, that would prevent significant deterioration of air quality due to emissions of NO_X. Under this option, we would establish a procedure for a State to submit a SIP demonstration to EPA to fulfill the requirements of sections 166(c) and 166(d) of the Act. If EPA determines that the SIP demonstration meets the requirements of section 166, then we would approve the demonstration and allow the State to implement the SIP in lieu of an increment system for NO_X. Thus, the State planning approach, like the cap and trade approach, would provide States with an incentive to implement a program to prevent significant deterioration of air quality due to emissions of NO_X that may be more effective than an increment system.

The State planning approach will be implemented through States' SIPs. Any State choosing this option could submit a demonstration that its SIP establishes a clear planning goal, of the State's own design, to satisfy the section 166 PSD requirements for NO_X. To achieve the goal of its SIP, a State could impose NO_X emission limitations on any emissions sources it chooses, whether new or existing, or demonstrate that existing Federal and SIP limitations have the appropriate effect.

While this approach gives States more flexibility to design a program to prevent significant deterioration of air quality due to NO_X emissions using a system other than increments, the EPA review and approval process would be more time- and data-intensive. Under this approach, the State would need to provide a rigorous demonstration that its planning goal and measures (in conjunction with Federal requirements) for meeting that goal are at least as effective in preventing significant air quality deterioration for NO_X as the increments for PM and SO_2 (fulfilling the safe harbor requirement of section 166(d)) and are consistent with the criteria in section 166(c) and the goals and purpose of PSD in section 160 of the Act.

In contrast to the cap and trade option described above, under this State planning option, we are not proposing that the State must demonstrate that the SIP includes a specific type of program that we have already found to be sufficient to satisfy the requirements of section 166. However, under this State planning option, we could establish a specific planning goal that we find to be sufficient to satisfy the requirements of section 166. Thus, if the State demonstrates that its SIP achieves our recommended planning goal, this could streamline EPA action on the plan. However, if we do not establish such a goal, a State would have to define this on its own and demonstrate to EPA how a program that achieves that goal would satisfy the requirements of section 166 of the Act.

An example of a State planning goal that we believe could meet the requirements of section 166 would be a goal that statewide NO_X emissions from all sources would remain at or below the level observed in a specific baseline year that, in turn, is identified to be equivalent to the level of emissions that results in significant deterioration. A State could propose to achieve such a goal by tracking and managing the inventory of emissions from all sources in the State to ensure that statewide emissions of NO_X do not increase above this level. This approach would in effect authorize a State to replace the NO_X increment requirement by demonstrating that its SIP measures, in conjunction with Federal measures, achieve reductions in NO_X emissions from all sources that are sufficient to offset projected increases from all types of new and modified sources. We believe this approach could be an effective alternative to an increment system. This kind of a State planning approach would prevent significant deterioration of air quality due to emissions of NO_X with a goal that effectively permits no NO_X emissions increases from a specific baseline date. The State would have to track its inventory of emissions and establish control measures on all types of sources (new and existing) as appropriate to meet the goal.

1. Description of State Planning Approach

This State planning option allows States to prevent significant deterioration of air quality due to NO_X emissions through specific statewide control strategies. In developing its approach, the State may consider broad scientific research and assessment of various means of meeting air quality management goals (visibility progress, emission density requirements, or other markers).

The State planning approach may be workable for source categories such as mobile and area sources, for which a budget approach is unproven and for which the available emissions quantification techniques are too imprecise to support the budget approach. As stated before, a State may achieve its SIP goal by controlling NO_X emissions from any emissions sources it chooses. The State's control requirements, when implemented, must prevent significant deterioration of air quality due to NO_X emissions.

Under this option, a State may choose to develop its own NO_X emissions cap, with approval based on the cap's meeting the requirements of sections 166(c) and 166(d). That is, for purposes of this proposed rule, the State would not be subject to an EPA-determined NO_X budget. The State would be responsible for tracking its NO_X emissions and for identifying and reacting to needed corrections in its allowable NO_X emissions.

Under the State planning option, SIPs could include emission targets that provide for growth from new and modified sources. SIPs should be required to track actual emissions increases from new and modified sources and provide mechanisms for addressing areas that exceed these projected increases. The State is manager of the air quality resource and decides how much growth it will allow consistent with the requirement to prevent significant deterioration of air quality.

a. SIP Requirements

Under the State planning option, a State may impose NO_X emissions control requirements in the form of a NO_X emission rate limit, a specified type of technology, or even a cap on NO_X emissions. However, to demonstrate that its plan is at least as effective as the increments for PM and SO_2, the State must demonstrate through its emissions inventory that its control requirements are adequate from an air quality standpoint.

Critical to SIP planning are the elements of accountability and emissions tracking. To ensure that the SIP goal is achieved, the State planning approach requires an accurate baseline emissions estimate. Then, to demonstrate the amount of emissions control from the controlled sources, the State must take into account the amount of emissions attributable to the sources or source category both in the base case year and in the control case. The SIP must include monitoring, recordkeeping, and reporting requirements. Unlike under the cap and trade option (option 2), under the State planning option (option 3), the State must bear the responsibility for monitoring progress and tracking emissions.

The EPA is soliciting comment on what requirements are needed to ensure that the SIP goal is met. Overarching considerations include whether the requirements: (1) Provide certainty that all emissions that are controlled pursuant to this option are adequately controlled; (2) ensure that controls will continue to be adequate in future years; and (3) ensure that the control requirements can be feasibly implemented.

Pursuant to section 166(c), the State goal must provide specific numerical measures against which permit applications may be evaluated. Under option 3, we propose that each SIP demonstration must include a NO_X emissions inventory for its baseline year (1990 or other). The State will have to weigh its projected reductions against its projected increases (so as to allow for growth) over the next 10 years. Each State will need to demonstrate that the objectives of the statutory PSD program for NO_X are being met, for example, by demonstrating that NO_X increases are less than or equal to NO_X reductions at the end of a 10-year period, or by some other scheme that can accommodate significant growth of emissions, which is particularly anticipated in the western U.S. Based on the State's demonstration through statewide modeling and analysis that it will meet the SIP goal, the State would be permitted to waive some of the case-by-case analysis for new and modified major sources subject to PSD preconstruction permitting.

b. Benefits of State Planning Approach

The State planning approach could effectively serve in the same way that an increment system does to prevent significant air quality deterioration, with the added benefit of eliminating the need for certain case-by-case source analyses as currently required for sources applying for preconstruction permits under State PSD programs. Depending on how a program is designed by the State, a State planning approach could not only prevent significant air quality deterioration but, while not required to do so, also provide substantial improvements in air quality over time as any required controls are installed on sources in order to meet the State goal. For example, reductions in NO_X will contribute to visibility improvements (69 FR June 10, 2004, at 37205–6) and will also help to reduce acidification and eutrophication of water bodies (69 FR January 30, 2004, at 4642–3).

2. Using State Planning Approach in Lieu of an Increment System for NO_X

a. State Planning Approach Can Meet Requirements of Section 166 of Clean Air Act

We believe EPA's obligation under section 166 to promulgate pollutant-specific regulations for NO_X could be satisfied by permitting States to demonstrate that ''other measures'' besides increments will prevent significant deterioration of air quality due to NO_X emissions, so long as those measures are consistent with the requirements of sections 166(c) and 166(d) of the Act. The EPA could satisfy these requirements by establishing a planning goal based on the requirements of these provisions and then providing a process for States to demonstrate how the measures in their SIPs would achieve this goal.

(1) *State planning framework fulfills many of the factors applicable under section 166.* A State planning framework has many characteristics that satisfy the requirements of section 166(c), and such an approach could qualify as an ''other measure'' that is permissible under section 166(d). A State planning program framework, in combination with the specific measures in the State SIP and other Federal measures, could fulfill the requirements of sections 166(c) and 166(d).

Under a State planning framework, an emissions inventory could function as a specific numerical measure that could be used to evaluate permit applications. The inventory could be expressed in terms of a mass of total emissions (tons) across the State rather than an air quality concentration ($\mu g/m^3$) as is the case with increments and NAAQS. The State permitting authority could evaluate the permit application against the inventory of total emissions for all sources and determine if there was room in the inventory for a new source or an increase in emissions from a modified source. If so, then a preconstruction permit could be issued without causing emissions to exceed the level of the inventory. If there was not room in the inventory for emissions from a new or modified source, then the permit applicant would have to obtain offsetting reductions from other sources. This type of numerical measure could also streamline permitting because the evaluation of a permit application against an emissions inventory would be a relatively simple exercise that does not require extensive air quality modeling by the permit applicant.

A State planning framework that utilizes an emissions inventory would also stimulate improvements in control technology at both new and existing sources. In order to make room in the inventory for growth from new sources or modifications to existing sources, a State may elect to establish additional control measures on existing sources. This would stimulate improvements in control technology at those sources. However, a State might instead elect to require that new and modified sources bear a greater burden of controlling emissions and thus stimulate these sources to make improvements in control technology. Major new and modified sources would still have to install BACT under this option, but the State could also establish limitations that give minor sources incentive to employ improved control technology to keep emissions below the inventory. A State could also develop some combination of these approaches that balances the burdens across new and existing sources. Thus, a State planning approach of this nature would stimulate improvements in control technology while also providing the States with the flexibility to identify the sources in that State that can most cost-effectively install improved controls.

A State planning framework could also address the goal in section 160(4) of the Act to assure that emissions in one State do not interfere with the PSD program in another State. The EPA could adopt this goal as a criterion that must be met in order for the State planning process to prevent significant deterioration of air quality due to emissions of NO_X. Thus, in addition to showing that emissions would not exceed the inventory, States might have to demonstrate that their SIPs will not cause the inventory to be exceeded in neighboring or downwind States. The EPA would not approve a SIP that does not meet this goal and could thereby ensure that emissions from upwind States are effectively managed to prevent significant deterioration of air quality in other States. This goal is to a large extent already embodied in the State planning process based on section 110(a)(2)(D)(i)(II) of the CAA. This section requires that SIPs contain adequate provisions to prohibit emissions from any source from interfering with the part C (PSD) program in another State. Thus, we may not need to make any changes to our SIP planning regulations to satisfy the section 160(4) goal if we allowed States to use the State planning approach to satisfy section 166 of the Act.

With respect to the PSD goal in section 160(5) that any decision to increase air pollution be made only after careful evaluation and public participation, the evaluation would be conducted and opportunities for public participation would occur under the State's planning approach when the baseline year for the statewide emissions inventory is proposed. The EPA or the State would conduct a careful evaluation at that time and provide an opportunity for public comment. Once the inventory baseline is established, it will guide future permit evaluations. If a project subject to the permit requirement would not cause statewide emissions to exceed this level, the permit could be issued without as extensive a review at the permitting stage as would be required under the increment system. The careful evaluation conducted at the time the baseline year is selected will have already established whether an emissions increase could be allowed without preventing significant deterioration of air quality. In addition, major sources will still need to obtain permits and achieve BACT, so there would continue to be some case-by-case review and public participation under a State planning framework.

To satisfy the minimum requirements of section 166(d) under the ''contingent safe harbor'' approach, the baseline inventory selected for a State planning program would have to represent a level that is at least as effective as the increments for PM and SO_2. As discussed above, these statutory increments were established as a percentage of the NAAQS, which are expressed as a concentration of air pollution. To make a quantitative showing that the mass-based emissions inventory is as effective as the concentration-based increments for PM and SO_2, EPA or the States (depending on who establishes the inventory) could conduct ambient air quality modeling to predict the statewide concentrations of NO_2 achieved by maintaining the inventory of emissions at a specific level. The EPA or the State might then be able to show that the selected emissions inventory will maintain NO_2 concentrations within a certain percentage of the ambient concentrations of NO_2 as of the applicable baseline date (or dates) in the area. We request comment on whether there are other equally effective approaches (both qualitative and quantitative) that we might use to show that maintaining statewide emissions at a specific level is at least as effective as the increments for PM and SO_2.

The statewide emissions level that is as effective as the increments for PM and SO_2 would represent the ''safe harbor'' under the contingent safe harbor interpretation of section 166 of the Act. Once the safe harbor level is identified in this manner, we would conduct further review to determine whether it satisfies the requirements of section 166(c) by using the same balancing test discussed above. We would use this balancing test to determine whether an emissions level other than the ''safe harbor'' level should be maintained to protect air quality values, public health and welfare, and parks and other special areas, while also ensuring economic growth consistent with the preservation of existing clear air resources.

(2) *A SIP that allows no increase in total NO_X emissions above 1990 levels could satisfy section 166 requirements.* To achieve both the environmental protection and the economic growth goals of the PSD program in our pollutant-specific PSD regulations for NO_X, we propose, under this State planning option, to establish a goal that the State maintain an emissions inventory for NO_X emissions at the levels observed in 1990. The year 1990 is one for which we have developed sound NO_X emissions inventories for all States as a result of our work on the CAIR proposal. We propose the use of this year based in part on an assumption that the NO_2 increment baseline date (*i.e.*, minor source baseline date) has already been set as of that year, for all or most of the State. Relying on this assumption, we generally believe that by maintaining statewide NO_X emission levels at 1990 levels, many States could prevent significant deterioration of air quality due to emissions from NO_X and protect AQRVs, health and welfare, and parks and other special areas, while also ensuring economic growth, although a specific statewide demonstration would still need to be submitted to EPA in each case.

The EPA recognizes that in some States, using a 1990 baseline inventory for NO_X may not represent a measure at least as effective as the increments under a SIP planning approach, even though NO_X emissions reductions are achieved and air quality improvements result in subsequent years when the NO_2 increment baseline concentration date has not yet been set for all or most areas in the State. Until the baseline date is set for most of the State, reductions in ambient concentrations of NO_2 would be counted as part of the baseline concentration and would not affect the amount of NO_2 increment. Reductions of NO_X emissions in the years following 1990 would result in lower ambient concentrations of NO_2 and thus result in a lower NO_2

increment baseline concentration. Maintaining NO_X emissions at a 1990 level when the NO_2 increment baseline had not yet been set could allow for higher ambient NO_2 concentrations than would be allowed by adding the NO_2 increment to a lower NO_2 baseline concentration. For this proposal, EPA believes that it is necessary for the baseline date to have already been set by 1990 in most areas of the State in order for the State to use the 1990 NO_X inventory as its baseline NO_X inventory.

While we are proposing a 1990 baseline emissions inventory date, we believe it is possible for a State to choose a different baseline year that would accomplish the same objective. Therefore, we also solicit comment on how much flexibility States should be given in selecting a baseline year under this State planning option.

(3) *State planning approach satisfies ambient air quality review requirements.* If we permit States to employ a State planning framework in lieu of NO_2 increments to meet the requirements of section 166 for NO_X, we believe it will no longer be necessary for sources to conduct a site-specific ambient air quality analysis for NO_2 to comply with the requirements of section 165(a)(3) of the Act. If there is room under a properly derived emissions inventory for a particular new or modified source, it will already be clear that the source will not cause or contribute to air pollution in excess of the NAAQS. Before the permit is evaluated, EPA or the State will have already performed an ambient air quality analysis across the State to show that holding NO_X emissions at the chosen level is sufficient to prevent significant deterioration of air quality or avoid an exceedance of the NO_2 NAAQS. The statewide emissions level would fill the role of the increment, so section 165(a)(3) would be satisfied without a source-specific showing that a source's proposed emissions increase does not cause or contribute to air pollution increases in excess of the increment. The permit applicant would only need to show that there is room in the State's emissions inventory for its emissions. As with the cap and trade approach discussed above, it would become redundant and unnecessarily costly in many respects to require an individual source to conduct a site-specific air quality analysis if EPA or the State has already established that maintaining emissions at a specific level does not cause air pollution to exceed standards and meets the goals and purposes of PSD and the requirements of section 166.

b. Using a State Planning Approach To Streamline the PSD Permitting Process

If a State makes the necessary demonstration under this option, we would not require the State to implement some of the existing PSD preconstruction permitting requirements for NO_X. A source-specific ambient air quality, increment, and NAAQS analysis would not be required, as described in the above subsection. However, as with the cap and trade program option described above, we do not propose for this State planning approach to replace all aspects of the PSD permitting process.

All new major stationary sources and major modifications would still have to obtain a permit prior to commencing construction on new projects that result in a significant net emissions increase for NO_X. These sources will also have to comply with emissions limitations based on BACT. As discussed above, BACT is required under section 165(a)(4) of the Act, not section 166. We do not believe this source-specific technology requirement can be fulfilled through alternative means under a State planning approach.

We request comment on whether other elements of the preconstruction analysis would remain necessary under this approach. If a State can maintain NO_X emissions at levels that prevent significant deterioration of air quality, this might also eliminate the need for source-specific FLM review in Class I areas. *See* 40 CFR 52.21(p). As discussed above in the cap and trade option, we propose to interpret the Act not to require this process for NO_X but to permit EPA in its discretion to require the process, as necessary, to meet the requirements of section 166. To the extent the State planning goal protects AQRVs, this process may not be necessary under this option for NO_X. We also request comment on whether the additional impacts analysis (*see* CAA 165(a)(6) and 40 CFR 52.21(o)) could be performed through the State planning process and then not be required on each individual permit application. For the reasons discussed above, we request comment on whether, under this State planning option, it would be necessary to continue to require applicants to collect pre-application air quality monitoring data over a 12-month period preceding the submittal data of an application. We believe that this kind of data may need to be gathered by the State in order to demonstrate that a SIP planning goal meets the PHS requirements.

c. What Are Some Issues That Still Need To Be Resolved?

EPA recognizes certain significant issues that still need to be resolved before a comprehensive proposal can be set forth for public review and comment. These issues are presented here for public consideration. The EPA will review the comments submitted and present its findings in a supplemental notice in the future if the Agency intends to continue to pursue this option.

(1) *Failure to maintain statewide NO_X emission at a level that prevents significant deterioration of air quality.* The EPA recognizes that it may not be possible for every State to maintain its inventory of statewide total NO_X emissions as necessary to ensure prevention of significant deterioration of air quality due to emissions of NO_X. For example, this could occur where, over a period of time, the statewide NO_X emissions from uncapped sources substantially exceed the NO_X reductions achieved by regulating a specific group of sources. Also, unanticipated growth in a particular industry could cause a State's projection of NO_X emissions for a particular source category to be exceeded. Consequently, in those States, it may be difficult to demonstrate the use of the State planning option as a substitute for the increment system for NO_X. As stated earlier, it is the obligation of the State to demonstrate that the objectives of the statutory PSD program for NO_X are being met, whether or not NO_X emissions remain below the baseline at the end of a 10-year period.

As part of the demonstration that States must make to support the State planning option, the State will have to make a comprehensive showing that total statewide NO_X emissions will continue to prevent significant deterioration for future years. The EPA believes that it will be necessary for the State to conduct periodic assessments (*e.g.*, 10-year intervals) of NO_2 air quality trends for NO_X in order to continue justifying the SIP as a substitute for an increment system to prevent significant deterioration of air quality due to emissions of NO_X. The EPA seeks comments on the frequency of any necessary periodic assessment, as well as other possible mechanisms for determining when adjustments may need to be made to a SIP that does not employ an increment system to prevent significant deterioration of air quality due to emissions of NO_X.

(2) *Potential for localized adverse impacts resulting from NO_X emissions increases from new and modified sources.* We recognize the possibility

under this proposed State planning option that sources may have potentially adverse localized impacts even when fulfilling statewide NO_X emissions requirements. A related concern arises if not all source categories are subject to the statewide NO_X emissions requirements under this option.

Thus, while we are tentatively considering allowing States to avoid the need under their PSD rules to require case-by-case source impact analyses (including the process of involving FLMs) under the preconstruction review for PSD, we are at the same time soliciting comments on how to address the potential problem of localized adverse impacts. We believe the approach described under the cap and trade option could readily apply under the State planning option as well. That is, regulatory procedures could be established that would authorize the permitting authority (or FLM, in the case of a Class I area impact) to call for some type of source impact analysis when a proposed source locates within a specified distance of an area of concern, and the air quality in that area has shown little or no improvement since the State's planning approach took effect. We solicit comments on this and other possible ways of addressing this potential problem.

(3) *Additional measures under a SIP.* We believe the SIP under the State planning option will have to include additional measures toward NO_X emissions control and/or a fall-back increments program. A backstop for the State planning option might involve a margin of progress. The SIP would contain provisions for additional reductions or NO_2 increments if the margin of progress is exceeded. For example, if a State's NO_X emissions rate (tons per year) increases such that it is within 5 percent of the baseline rate, then the State would be obliged to employ the additional measures in its SIP to correct its NO_X emissions. We solicit comment on whether States under option 3 should be required to continue to track NO_2 increment consumption for new and modified sources.

VII. Other Alternative Considered

As noted above, under section 166(d) of the Act, the regulations to fulfill the objectives of the statutory program for PSD ''may contain air quality increments, emission density requirements, or other measures,'' provided such measures are at least as effective as the increments for SO_2 and PM. Our proposed options, including option 2 (cap and trade approach) and option 3 (State planning approach), are such measures. The State planning option gives States broad discretion in designing their own approaches for satisfying PSD requirements.

EPA is not proposing to utilize ''critical load'' as the basis for a regulatory measure to prevent significant deterioration of air quality due to emissions of NO_X at this time, given that the science is still being developed for the concept. The EPA recognizes, however, that a State may choose to utilize a critical load concept as part of its air quality management approach to meet its broader air quality goals. Thus, if a State proposes to use such a concept, considering the state of the science and its developments over time, to satisfy the State's overall air quality goals, EPA would consider it when determining whether a State's approach satisfies PSD requirements. The EPA believes that a State might choose to pursue this concept under a State planning option.

The National Park Service (NPS) has been focusing on the concept of a ''critical load'' to assess the risk to park ecosystems from atmospheric deposition. Critical loads can be defined as ''quantitative estimates of an exposure to one or more pollutants below which significant harmful effects on specified sensitive elements of the environment do not occur according to present knowledge'' (1995 Staff Paper at xi–xii). In its 1995 report entitled ''Acid Deposition Standard Feasibility Study: Report to Congress,'' EPA noted that critical loads had been developed in other countries and that, in the U.S., several States had developed critical loads for acid deposition, expressed as deposition rates for sulfur. Only in California had critical loads been established for nitrogen as recommendations to protect certain sensitive California resources (1995 Staff Paper at 53–55).

Ecosystems research over the last few decades has produced findings that may be sufficient to identify changes to sensitive elements of the environment resulting from exposure to atmospheric nitrogen in its various forms. In some cases, the available scientific literature has indicated the possibility of estimating levels of exposure at which a particular adverse impact will result.

For exposure to nitrogen, deposition critical load determinations are based on indicators of harmful ecological change that include episodic and chronic acidification of streams and rivers, chemical changes in soils and vegetation, nutrient enrichment and eutrophication, and shifts in plant species composition. A more detailed description of these types of adverse effects is contained in section V of this preamble. Nitrogen critical load thresholds are expressed in kilograms or equivalents of nitrogen deposited per hectare per year. Federal Land Managers are beginning to evaluate the European approach for ecosystem assessment that uses the concept of critical loads.

Nitrogen impacts have been documented in areas ranging from East Coast estuaries to southern California chaparral communities. These impacts are found in diverse ecological communities ranging from fisheries to grasslands to lichens. At a given location, different critical loads can be developed for different ecosystem changes (*e.g.*, the loading at which episodic acidification begins to occur may be different than the loading at which plant species shifts occur in the same area).

As noted above, a State may wish to identify a critical load level for nitrogen in order to develop a ''target load'' aimed at addressing a harmful ecosystem change, or preventing it in places where the critical load has not yet been reached as part of an air quality management approach. For areas where the critical load has already been exceeded, a State could establish, as part of such an approach, a target load higher than the critical load, as a progress goal towards the critical load. The target load could then be used to establish emissions goals through deposition modeling. The State might then choose to use efficient management mechanisms, such as cap and trade programs or regional emission control strategies, to ensure that target loads are not exceeded.

As noted above, if a State wishes to pursue such an approach as part of its air quality management program, the Agency would work with the State to determine whether the approach would satisfy PSD requirements. In determining whether a State's approach satisfies PSD requirements, EPA will also consider other measures already established in a State's SIP. To the extent a State program focused on critical loads is needed to satisfy PSD requirements, it would also need to be incorporated into the SIP.

VIII. Statutory and Executive Order Reviews

A. Executive Order 12866—Regulatory Planning and Review

Under Executive Order 12866 (58 FR 51735, October 4, 1993), the Agency must determine whether the regulatory action is ''significant'' and therefore subject to review by the Office of

Management and Budget (OMB) and the requirements of the Executive Order. The Order defines ''significant regulatory action'' as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs, or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

Pursuant to the terms of Executive Order 12866, it has been determined that this rule is a ''significant regulatory action'' because the cap and trade and State planning options in the proposal raise novel legal and policy issues. As such, this action was submitted to OMB for review. Changes made in response to OMB suggestions or recommendations will be documented in the public record.

B. Paperwork Reduction Act

This action does not impose any new information collection burden. Under the proposed action, one option is to retain the existing increments and regulatory framework of the PSD regulations for NO_X. If the proposed action results in our retaining the existing increments program, the Office of Management and Budget (OMB) has previously approved the information collection requirements contained in the existing regulations (40 CFR parts 51 and 52) under the provisions of the Paperwork Reduction Act, 44 U.S.C. 3501, *et seq.*, and has assigned OMB control number 2060–0003, EPA ICR number 1230.17. A copy of the OMB-approved Information Collection Request (ICR) may be obtained from Susan Auby, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW., Washington, DC 20460, or by calling (202) 566–1672.

Under the second and third options of the proposal, we are proposing to allow States to implement alternative programs to the NO_2 increments. Option 2 would permit a State to implement a cap and trade program. Option 3 would permit a State to demonstrate that its SIP requirements satisfy the objectives of the PSD program. As presently constructed, the proposed options do not impose any new information collection burden on the States or regulated industries. If the proposed action results in our adopting the second or third options, then we will be publishing a supplemental notice and will at that time identify any changes in information collection requirements.

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations in 40 CFR are listed in 40 CFR part 9.

C. Regulatory Flexibility Act (RFA)

The Regulatory Flexibility Act (RFA) generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations, and small governmental jurisdictions.

For purposes of assessing the impacts of today's proposed rule on small entities, small entity is defined as: (1) A small business as defined by the Small Business Administration's (SBA) regulations at 13 CFR 121.201; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; or (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.

After considering the economic impacts of today's proposed rule on small entities, I certify that this action will not have a significant economic impact on a substantial number of small entities. In determining whether a rule has a significant economic impact on small entities, the impact of concern is any significant adverse economic impact on small entities, since the primary purpose of the regulatory flexibility analysis is to identify and address regulatory alternatives ''which minimize any significant economic impact of the rule on small entities.'' 5 U.S.C. 603 and 604. Thus, an agency may certify that a rule will not have a significant economic impact on a substantial number of small entities if the rule relieves regulatory burden or otherwise has a positive economic effect on all of the small entities subject to the rule. The proposed rule will not impose any requirements on small entities and in fact may relieve some small entities of certain permit-related expenses. Under option 1 of the proposal, we would retain existing regulations without change and thus impose no new requirements. Under options 2 and 3 of this proposal, we propose to allow States to adopt alternative programs to relieve the burden of conducting specific ambient air quality and increment analyses under the PSD program. We continue to be interested in the potential impacts of the proposed rule on small entities and welcome comments on issues related to such impacts.

D. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104–4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, local, and tribal governments and the private sector. Under section 202 of the UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with ''Federal mandates'' that may result in expenditures to State, local, and tribal governments, in the aggregate, or to the private sector, of $100 million or more in any one year. Before promulgating an EPA rule for which a written statement is needed, section 205 of the UMRA generally requires EPA to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective, or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows EPA to adopt an alternative other than the least costly, most cost-effective, or least burdensome alternative if the Administrator publishes with the final rule an explanation why that alternative

was not adopted. Before EPA establishes any regulatory requirements that may significantly or uniquely affect small governments, including tribal governments, it must have developed under section 203 of the UMRA a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

Today's action contains no Federal mandates (under the regulatory provisions of Title II of the UMRA) for State, local, or tribal governments or the private sector. The proposed rule imposes no enforceable duty on any State, local or tribal governments or the private sector. Under option 1 of the rule, we propose to retain existing requirements and do not impose any new Federal mandates. States are not required to adopt the approaches set forth in options 2 and 3 of the rule, which may provide relief from some existing requirements. In any event, EPA has determined that this proposed rule does not contain a Federal mandate that may result in expenditures of $100 million or more for State, local, and tribal governments, in the aggregate, or in the private sector in any one year. Thus, today's proposed rule is not subject to the requirements of sections 202 and 205 of the UMRA.

E. Executive Order 13132—Federalism

Executive Order 13132, entitled ''Federalism'' (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure ''meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.'' ''Policies that have federalism implications'' is defined in the Executive Order to include regulations that have ''substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.''

This proposed rule does not have federalism implications. This proposed rule will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. If the existing regulations for increments are retained under option 1, no new regulatory requirements will be imposed on States. Options 2 and 3 of the proposal would permit States to obtain relief from certain regulatory requirements by adopting alternative programs but do not require adoption of those programs. Furthermore, the cap and trade option of this proposed rule does not impose any requirements but rather allows States to obtain regulatory flexibility by implementing the requirements of another rule. Direct compliance costs associated with today's proposed rule could be incurred when States incorporate any changes into their State implementation plans, but these direct compliance costs would not be significant. Thus, Executive Order 13132 does not apply to this proposed rule. In the spirit of Executive Order 13132, and consistent with EPA policy to promote communications between EPA and State and local governments, EPA specifically solicits comment on this proposed rule from State and local officials.

F. Executive Order 13175—Consultation and Coordination With Indian Tribal Governments

Executive Order 13175, entitled ''Consultation and Coordination with Indian Tribal Governments'' (65 FR 67249, November 9, 2000), requires EPA to develop an accountable process to ensure ''meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications.'' This proposed rule does not have tribal implications, as specified in Executive Order 13175. The proposed action, whether to retain existing regulations or to obtain regulatory flexibility by choosing to implement an alternative program, does not impose any new regulatory restrictions. Thus, Executive Order 13175 does not apply to this proposed rule. The EPA specifically solicits additional comment on the proposed rule from tribal officials.

G. Executive Order 13045—Protection of Children From Environmental Health and Safety Risks

Executive Order 13045, ''Protection of Children from Environmental Health Risks and Safety Risks'' (62 FR 19885, April 23, 1997), applies to any rule that: (1) Is ''economically significant'' as defined under Executive Order 12866; and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, the Agency must evaluate the environmental health or safety effects of the planned rule on children and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency.

This proposed rule is not subject to the Executive Order because it is not economically significant as defined in Executive Order 12866, and because the Agency does not have reason to believe the environmental health or safety risks of NO_X addressed by this action present a disproportionate risk to children. Option 1 of the proposed rule is to retain existing regulations and does not impose any new regulatory requirements. Options 2 and 3 of the proposed rule would permit States to obtain relief from certain regulatory requirements by adopting alternative programs but do not require adoption of those programs. The public is invited to submit or identify peer-reviewed studies and data, of which the agency may not be aware, that assessed results of early life exposure to NO_X.

H. Executive Order 13211—Actions That Significantly Affect Energy Supply, Distribution, or Use

This proposed rule is not a ''significant energy action'' as defined in Executive Order 13211, ''Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use'' (66 FR 28355, May 22, 2001), because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. Option 1 of the proposed rule is to retain existing regulations and does not impose any new regulatory requirements. Options 2 and 3 of the proposed rule may provide relief from certain regulatory requirements if States adopt alternative programs. The cap and trade option (option 2) of this proposed rule does not impose any requirements but rather allows States to obtain regulatory flexibility by implementing the requirements of another rule.

I. National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (''NTTAA''), Public Law 104–113, 12(d) (15 U.S.C. 272 note), directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical.

Voluntary consensus standards are technical standards (*e.g.*, materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies. The

NTTAA directs EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable voluntary consensus standards. This proposed rule does not involve technical standards. Therefore, EPA is not considering the use of any voluntary consensus standards. The EPA welcomes comments on this aspect of the proposed rulemaking and specifically invites the public to identify potentially applicable voluntary consensus standards and to explain why such standards should be used in this regulation.

List of Subjects in 40 CFR Parts 51 and 52

Environmental protection, Administrative practices and procedures, Air pollution control, Intergovernmental relations, Nitrogen oxides, Ozone, Particulate Matter, Reporting and recordkeeping requirements.

Dated: February 14, 2005.

Stephen L. Johnson,

Acting Administrator.

References

Allen, E.B., P.E. Padgett, A. Bytenerowicz, R. Minnich, 1998. ''Nitrogen Deposition Effects on Coastal Sage Vegetation of Southern California.'' Expanded version of presentation at the International Symposium on Air Pollution and Climate Change Effects on Forest Ecosystems, Riverdale, CA, February 5–9, 1996. USDA Forest Service Gen. Tech. Rep. Pacific Southwest Research Station, PSW–GTR–166, p. 131–139. 1998.

Bowman, W.D., 2000. ''Biotic Controls over Ecosystem Response to Environmental Change in Alpine Tundra of the Rocky Mountains.'' Ambio, vol. 29, no. 7 (p. 396–400), November 2000.

Butler, T.J., G.E. Likens, and B.J.B. Stunder, ''Regional-scale Impacts of Phase I of the Clean Air Act Amendments in the USA: the Relation Between Emissions and Concentrations, Both Wet and Dry.'' Atmospheric Environment, vol. 37 (p. 1015–1028), 2000. *http://www.sciencedirect.com/science/journal/13522310.*

Butler, T.J., G.E. Likens, F.M. Vermeylen, and B.J.B. Stunder, ''The Relation Between NO_x Emissions and Precipitation NO_3^- in the Eastern USA.'' Atmospheric Environment, vol. 37 (p. 2093–2104), 2003. *http://www.sciencedirect.com/science/journal/13522310.*

Dahlgreen R.A., J.M. Holloway, ''Geologic Nitrogen as a Non-point Source of Nitrate in Natural Waters.'' Soil Science: Confronting New Realities in the 21st Century (World Congress of Soil Science); 17th WCSS, 14–21 August 2002; Symposium no. 6, paper no. 83. *http://www.sfst.org/Proceedings/17WCSS_CD/papers/0083.pdf.*

Driscoll, C.T., G.B. Lawrence, A.J. Bulger, T.J. Butler, C.S. Cronan, C. Eagar, K.F. Lambert, G.E. Likens, J.L. Stoddard, and K.C. Weathers, ''Acid Rain Revisited: Advances in Scientific Understanding Since the Passage of the 1970 and 1990 Clean Air Act Amendments.'' Hubbard Brook Research Foundation Science Links' Publication. Vol. 1, no. 1, 2001.

Fenn, M.E., M.A. Poth, J.D. Aber, J.S. Baron, B.T. Bormann, D.W. Johnson, A.D. Lemly, S.G. McNulty, D.F. Ryan, and R. Stottlemyer, 1997. ''Nitrogen Excess in North American Ecosystems: Predisposing Factors, Ecosystem Responses, and Management Strategies.'' Ecological Applications, vol. 8, no. 3 (p. 706–733), August 1998.

Fenn, M.E., R. Haeuber, G.S. Tonnesen, J.S. Baron, S. Grossman-Clarke, D. Hope, D.A. Jaffe, S. Copeland, L. Geiser, H.M. Rueth, and J.O. Sickman, ''Nitrogen Emissions, Deposition and Monitoring in the Western United States.'' BioScience, vol. 53, no. 4 (p. 1–13), April 2003.

National Oceanic and Atmospheric Administration. (2004) AIRMon Dry Deposition. Air Resources Laboratory. *http://www.arl.noaa.gov/research/projects.airmon_dry.html;* August 5, 2004.

National Science and Technology Council. (1998) NAPAP Biennial Report to Congress: An Integrated Assessment. National Acid Precipitation Assessment Program. May 1998.

U.S. Department of the Interior, ''Air Quality in the National Parks: Second Edition.'' September 2002.

U.S. Environmental Protection Agency. (1993) Air Quality Criteria for Oxides of Nitrogen. (3 volumes). Office of Air Quality Planning and Standards. EPA–600/8–91/049aF–cF, August 1993. Available at Docket No. AR–95–01.

U.S. Environmental Protection Agency. (1995) Review of the National Ambient Air Quality Standards for Nitrogen Dioxide: Assessment of Scientific and Technical Information. (OAQPS Staff Paper.) Office of Air Quality Planning and Standards. EPA–452/R–95–005, September 1995. *http://www.epa.gov/ttn/naaqs/standards/nox/s_nox_pr_sp.html.*

U.S. Environmental Protection Agency. (1995) Acid Deposition Standard Feasibility Study: Report to Congress. Office of Air and Radiation. EPA 430–R–95–001a, October 1995. Available at Docket No. AR–95–01.

U.S. Environmental Protection Agency. (1997) Nitrogen Oxides: Impacts on Public Health and the Environment. Office of Air Quality Planning and Standards. EPA 452/R–97–002, August 1997.

Wang, X., ''Aluminum Mobilization from the Forest Land.'' The Roosevelt Wild Life Station. State University of New York; College of Environmental Science and Forestry. *http://www.esf.edu/resorg/rooseveltwildlife/Research/Al/Al.htm; July 28, 2004.*

[FR Doc. 05–3366 Filed 2–22–05; 8:45 am]

BILLING CODE 6560–50–P